EXTERMINATORS LOG

MAY 1938 | "Trade Paper Authority for Pest Control Industry" | VOL. 6, NO. 5

ESTABLISHED 1933

"SO LIZZIE DOESN'T LIVE HERE ANY MORE"

HERE'S a most economical way to control pests. Do a thorough job of HCN fumigation with CYANEGG* (Du Pont Sodium Cyanide 96%) and the cyanide generator. The substantial reduction in price recently announced by Du Pont makes egg CYANEGG more than ever the most economical source of HCN. And the generator is a simple, compact piece of equipment that lets you control fumigations from *outside* the premises.

CYANEGG with the cyanide generator lets you work faster, too. There's only one piece of apparatus to charge. Then, just as soon as you've applied the HCN, you can clean the generator quickly and hurry it away to the next job. No waiting to ventilate the building before gathering up your equipment.

Write for details of this remarkably easy-to-use HCN set-up. That's your first step toward more efficient, more profitable fumigation.

THE CYANIDE GENERATOR . . . charged, operated and controlled from outside the premises . . . is available in two sizes: No. 10, for fumigating up to 10,000 cubic feet; and No. 25, for fumigating up to 25,000 cubic feet.

*Reg. U. S. Pat. Off.

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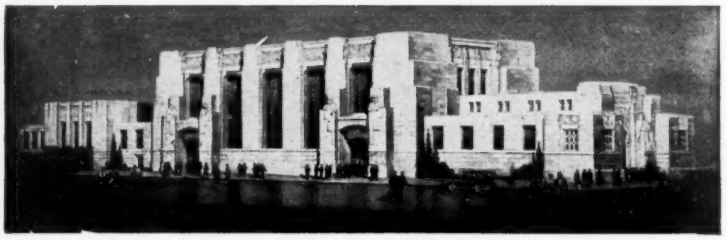
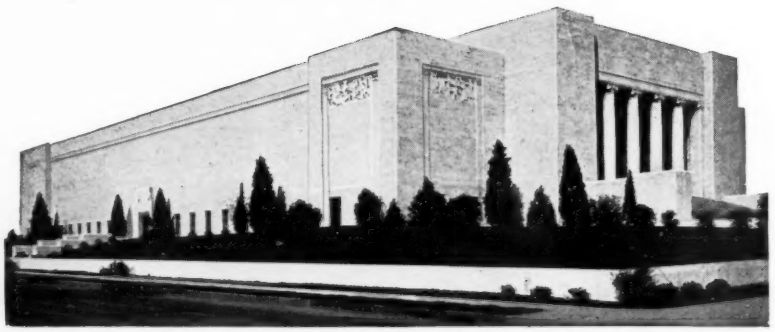


New Union Station

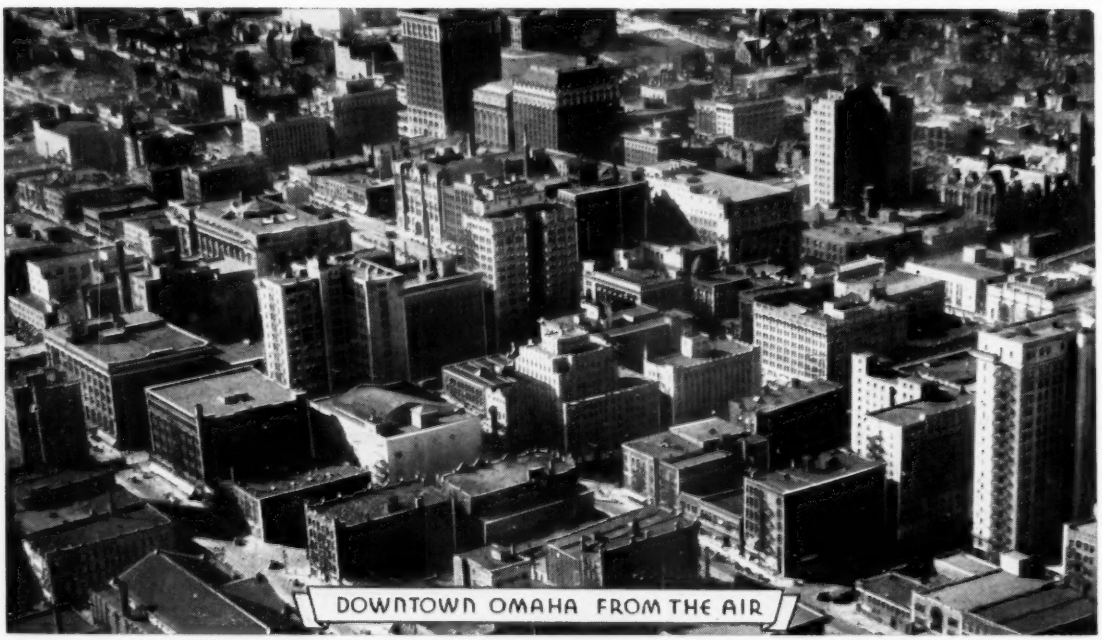
OMAHA

The 1938 Convention City



The Joslyn Memorial, above, was built and furnished at a cost of $3,500,000 by Mrs. Sarah Joslyn of Omaha, who gave it to the city as a memorial to her husband. It is constructed of Georgia pink marble and is considered an outstanding example of daring simplicity in architecture.

Hotel Fontenelle



DOWNTOWN OMAHA FROM THE AIR

EXTERMINATORS LOG

TRADE PAPER FOR PEST CONTROL INDUSTRY

Exterminators, Fumigators, Termite Control Operators, Mothproofers, Entomologists, Manufacturers of Insecticides and Supplies.

AL COSSETTA
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Three classes of membership: Active, Associated and Allied. ACTIVE MEMBERSHIP includes all firms engaged in any type of Pest Control operations (general extermination, fumigation, termite control, moth proofing) and dues are $10.00 per year. ASSOCIATE MEMBERSHIP includes branch offices of Active members and yearly dues are $7.50. ALLIED MEMBERSHIP includes manufacturers and supply houses.

STATEMENT

The National Association appreciates the co-operation given by way of publicity. The Association is not responsible for articles published unless credited to the Association. The list of officers and directors is published for informational purposes only.

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3019 Fort Hamilton Parkway Brooklyn, New York

CONTENTS

Editorial 4-5

Termite Control 6
By Neely Turner

Pacific Coast P. C. O.'s Hold Conference 8

Can a Lease Be Broken Because of the Presence of Bedbugs? 10
By C. Norman Dold

The Insect Parade 12
By Prof. Howard O. Deay

The Decay of Wood—Its Cause and Control 14
By Prof. Emanual Fritz

The Pest Control Operator as an Aid to Public Health 17
By F. M. Hall, M. D.

Prisoners Train Cockroach to Bring Them Smokes in Cell 18

Happenings at the Pacific P. C. O.'s Conference 19

California Legislation 20
By Glen V. Slater

Local Organization News 22

What's New in Pest Control — Personal 23

Write for These Booklets 25

Additional Patents Relating to Pest Control 27
By R. C. Roark

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Editorial

This Changing World

DIGGING into the history of commercial pest control has been an avocation with several members of the profession in recent months. Like most all industries we find that ours had a very meager beginning, however, in all probability the last decade has seen more real progress than has been evidenced in all the rest of its history.

To cite examples in support of such a sweeping statement we need but mention that the past ten years has recorded the birth of the National Association which in turn has kindled a very vital interest on the part of entomologists and Governmental authorities in our work. The Association has sponsored our splendid conventions, likewise the Pest Control Operators' Conferences at Purdue and Stanford Universities have been very educational and the men who have taken advantage of them are in a better position to serve the public than was possible in the ancient days.

New formulas, new inventions, new firms, new faces, all have contributed their part. In the early days, unfortunately, many who engaged in this work were frequently regarded as being "half cracked" and some folk seemed to think that being a bit balmly might be an asset on entering this field. Counter to that we now find more and more college and university graduates making this their profession. These with other level-headed business men make one proud to say he is engaged in the business of Pest Control.

Another interesting bit of evolution is that the fellow who works out of his basement or garage is decidedly out-of-date for we now find the firms have modern, well lighted offices manned by a competent staff of employees. The latest in physical equipment is none too good for the present day operator who uses among other things, large electric mixers for powder, another type of mixer for heavy chemicals, compressors, electric hammers and other modern instruments, all of which are employed in the present day warfare against pests. In the offices we find the latest of typewriters, adding machines, visible filing equipment, Dictaphones, Ediphones, and even postage meter machines to print the stamps right on the envelopes—nothing is too modern.

Many of the old timers would turn over in their graves if they could see the modern operator in action, but progress is that way and who among us would stop it? What will the next ten years bring? Will our greatest advances as an industry be made in man power, physical equipment or in plain every day "brains"?

Itinerant Specialists

THE Itinerant Specialists must not be confused with any effort to prevent one from seeking gainful pursuit of legitimate business. The itinerant is that individual who seems to travel from city to city. Sometimes these travels take the form of "rat campaigns;" other times there is a display of some testimonial letters, usually official in appearance; or there may even be the silver tongued orator or high pressure type of individual who convinces the public for awhile about the "wonderful success" in some other city.

The National Pest Control Association is to be congratulated in the reference made in a recent membership service letter. The industry can put a stop to this type of individual by taking up with the National Association such matters immediately when such individual appears in any city. Every effort is made to keep a file of the activities of this type of individual.

Western Pennsylvania seemed to be bothered with itinerants and the local Greater Pittsburgh Pest Control Association took the initiative to notify government officials in many cities. We quote the letter in that it may serve a useful purpose for others.

GREATER PITTSBURGH PEST CONTROL ASSOCIATION

Dear Sir:

The itinerant Exterminator and Fumigator will soon be going about your Community, doing unsatisfactory work, collecting, never to be seen again.

INVESTIGATE! BE ON THE LOOKOUT!

Call your local Board of Trade, Chamber of Commerce, the above association, or the National Pest Control Association. The name and address of every bona fide Pest Control Operator in the country is on file.

PROTECT YOUR CITIZENS!

Very truly yours,

DICK K. CLOWES,
Secretary.

Do Your Customers Owe You Money?

Try This Letter on Them

My Dear Sirs:

In reply to your request to send a check, I wish to inform you that the present condition of my bank account makes it almost impossible. My shattered financial condition is due to Federal Laws, State Laws, County Laws, City Laws, Corporation Laws, Liquor Laws, Mother-in-Laws, Brother-in-Laws, Sister-in-Laws, and Outlaws.

Through these Laws I am compelled to pay a Business Tax, Amusement Tax, Head Tax, School Tax, Gas Tax, Light Tax, Sales Tax, Liquor Tax, Carpet Tax, Income Tax, Food Tax, Furniture Tax and Excise Tax. Even my brains are Taxed. I am required to get a Business License, Car License, Hunting and Fishing License, Truck License, not to mention a Marriage License and a Dog License.

I am also required to contribute to every society and organization which the genius of man is capable of bringing to life; to Women's Relief, the Unemployed Relief and the Gold Digger's Relief. Also to every hospital and charitable institution in the city, including the Red Cross, the Black Cross, the Purple Cross and the Double Cross.

For my own safety I am required to carry Life Insurance, Property Insurance, Liability Insurance, Burglar Insurance, Accident Insurance, Business Insurance, Earthquake Insurance, Unemployment Insurance, Old Age and Fire Insurance.

My business is so governed that it is no easy matter to find out who owns it. I am Inspected, Expected, Suspected, Disrespected, Rejected, Dejected, Examined, Re-examined, Informed, Required, Summoned, Fined, Commanded and Compelled until I provide an inexhaustible supply of money for every known need of the human race.

Simply because I refuse to donate to something or other I am Boycotted, Talked About, Lied About, Held Up, Held Down and Robbed until I am almost ruined.

I can tell you honestly that for a miracle that happened, I could not enclose this check. The wolf that comes to many doors now-a-days, just had pups in my kitchen. I sold them and here is the money.

Yours Faithfully,

Convention

Preparations for the 1938 Convention of Pest Control Operators which is to be held in Omaha, Nebraska, The White Spot of the Nation, October 24, 25, 26, are progressing in fine shape.

The enthusiasm shown thus far more than guarantees the "400" that will be in attendance, that this will be the largest and best Pest Control Convention ever held.

Cooperation between the Chamber of Commerce, the Manufacturers, the National Association and the Local Convention Group is outstandingly harmonious.

On your calendar place a red ring around three convention days and be making plans now to be here and not miss one minute of the program.

Telephone Classified Directory Listings

By WILLIAM O. BUETTNER
Secretary National Pest Control Association

THAT there has been dissatisfaction on the part of the Pest Control Industry with regard to telephone classified directory listings would only be putting it mildly. In fact, there are really two problems involved as to the telephone classified directories. By far the most important problem is that of the "advertising copy" but it is not our intention to discuss this matter now. We desire to confine ourselves entirely to the second problem; namely, the listings that now appear. As there is in preparation the forthcoming editions and sales representatives are busy taking orders, now is the time to straighten out the matter of listings and the abuses in connection therewith. Merely to sit back in your chair and denounce the situation gets us nowhere. Such policy amounts to nothing more than destructive criticism. It is constructive approach followed by action that alone can bring about better policies.

It would appear that we should first understand more of the set-up and proper consideration given to the various factors that are involved. The classified telephone directory is essentially a reference book and thus we must work from the fundamental premise that it is the buyer of products or services who is perhaps the first consideration—the ease with which the public might refer to the directory and obtain information. The sequence must be obvious. In the first place there is the enterprising type of firm or what we would much prefer to call the "opportunist" type which thinks that if only some trick arrangement might be employed so that appearance of names or advertisements will be reduced to a minimum and thus allow for the law of averages to make for a possible greater number of inquiries for pest control services. Witness the various types of termite services that are attempted to say nothing of what substantially amounts to duplications in connection with general household pest control. Hand in hand with the "opportunist" type of firm is the salesman or representative of the directory who sees the possibility of another order. In short, we should not run away from the fact that our industry is as much to blame for the present situation as others who are trying to obtain orders for advertising or additional "name" listings. The fear complex as to what the public will do with regard to the acceptance of a term that perhaps at the present is not as thoroughly known, much less used, will automatically take care of itself as firms realize the importance and sound business sense to insist on a heading that truly encompasses the activities of the industry.

What then mitigates against the change? Two factors and only two enter the picture at this point. The first is the industry and the second are the officials of both telephone company or other agencies such as Reuben H. Donnelly Corp. which handles all details in connection with directories that probably mean approximately 50% of the volume business in this field of directory advertising. These officials must of necessity think in terms of the convenience of those who make use of the directory. It probably should be conceded in this case that if any questions were asked of the public as to where they would look if using the classified telephone directory as there are vermin or insect conditions, the average person might say "exterminators." This is largely due to the preponderance of the word "exterminating" that appears in the names of the pest control firms. In short, the officials in charge of the directories would be motivated on this basis to think in terms of "exterminating." No one would be so foolish as to suggest that the word "exterminating" should be dropped from the vocabulary in connection with our industry. On the contrary, the word "exterminating" is equally important as the word "fumigating" is to the firms engaged mainly in that type of service. The comprehensive term to embody all functions of the industry, however, would carry as "Pest Control" is used.

Part of a recent 5-page membership service letter expressed the situation as follows:

Telephone Classified Directory Listings: In our Membership Service Letter No. 110 we outlined the general plan by which the Reuben H. Donnelly Corp. will make efforts to cooperate. The plan is not ideal but it is decidedly a step in the right direction. It may be of interest to know that a careful study has been going on with regard to duplication of listings as well as unnecessary additional listings. For example, there are nearly 8000 different headings in the New York City classified telephone directory and it is expected that when the survey will have been completed and the policy changed in line with the findings of the survey, there will probably be only 3000 headings. But what of our industry? What is holding back the insertion of "Pest Control" as the major listing? To be sure, there has been progress in some cities, but in altogether too many cities it would appear that there is either lack of interest or the need of greater stress being put forward to show the importance of this desirable change. The picture seems to shape up as follows, or in other words, the "snags" take on a two-fold significance.

(a) Those in charge of the telephone classified directories have tried to sell themselves "a bill of goods" and this in turn is passed along to the Pest Control Industry which accepts too readily the explanation. In fairness to these officials, it must be stated that up to the present time the term "Pest Control" is probably as well recognized as it should be in that the average person who has a problem of the elimination and control of vermin, insects, etc., would probably think of our industry as "exterminators" or "bug exterminators." Largely for this reason the stepping stone toward "Pest Control" as far as Reuben H. Donnelly Corp. and its supervised directories will feature as the major heading "Exterminating —Fumigating" with all other listings used heretofore to continue their appearance but no names placed thereunder but the line "Refer to Exterminating — Fumigating." "Pest Control" should most certainly be featured in any display advertising so that the public will become accustomed to the term.

(b) The pest control operators themselves cannot agree among themselves. This lack of farsightedness to arrive at a unanimous and enthusiastic policy gives the impetus to telephone company officials and others in charge of classified telephone directories to continue more or less the present confusing policy. To reduce this thought in terse English and harsh remarks, it would appear that the "opportunist" type of pest control operators would like to see a continuance with the hope that something can be slipped over. In other words, this "little family feud" or whatever one might like to call it amounts to nothing more than a "fear complex" in terms of a competitor who might not be engaged in fumigating or some other specialized form of pest control might receive some business merely because all firms would be listed under the same heading.

It is high time that we cease being petty and take a long range point of view. Essentially the classified telephone directory is a reference guide. The worry about John Q. Public not knowing the term "Pest Control" will soon be changed when the major heading of "Pest Control" is put into effect. Picture, if you will, Boston: Just so soon as the telephone directory will carry the major heading of "Pest Control" and continue to carry the other headings that now appear (Bugs, Exterminating, Fumigating, Moth Proofing, Rats, Termites) and give absolutely no names of firms but merely the notation to "Please Refer to Pest Control," it will not take long for the public to become accustomed to the term. What better source can be employed than the classified telephone directory to assist in this change which will more accurately tell the truth about our industry? It is time to place to one side alibis and other excuses. We like to pride ourselves on being semi-professional. We do not find physicians listed under several headings, even though there is great specialization practiced by them.

It is up to the leaders of the industry to assist aggressively to bring about this change to "Pest Control." Those who desire to tell more about their companies will have a better chance to do so because they can carry display advertising rather than spending their money for "name appearances" under many superfluous listings. We are frank to state that even those firms which would be in the same listing with everyone else and although not engaged in certain specialized fields such as fumigation and termite control, etc., will have to be more truthful in stating that they do not engage in such work because the centralization of listing will allow for the kind of remarks that will assist all to be more truthful. (We will not discuss "copy" in this letter but are saving remarks on this subject when we tell the story about the questionnaire that was filled out some time back with regard to objectionable phrases, clauses, etc.).

Let us make it our business to have **one** and **only one** major listing; preferably "Pest Control," but if there must be a transition, the next best is "Exterminating—Fumigating." In any event, obtain promises from telephone officials in charge of classified directories that there will not be a continuance of other listings and above all work as a unit in making such requests. The firms in each city might well use such agencies as the Better Business Bureau or a recognized individual to whom all firms should address a letter on their own letterhead requesting the major listing and thus give the support of conviction that will soon have telephone company officials recognize the importance of our trying to bring about less confusion all around.

Only as the Pest Control Industry will speak plainly and be honest with itself can there be expected to correct the unnecessary evil of superfluous listings. It is our intention to give another article over entirely to the matter of "advertising copy."

TERMITE CONTROL

By NEELY TURNER, Connecticut Agricultural Experiment Station, New Haven, Conn.

EDITOR'S NOTE: *The following address was delivered by Mr. Turner at the monthly meeting of Associated Exterminators & Fumigators of New York, Inc., 7 East 44th Street, New York City, March 8, 1938. The discussion which followed is reported to have not only been interesting but all operators realized the importance of avoiding short cuts in Termite Control work.*

IT IS very difficult in discussing termites to arrive at the proper balance between biology of termites and a discussion of control. Entomologists have been criticized in the past for too much emphasis on "the love life of the termite" and too little emphasis on control measures. Tonight I will limit my discussion of biology to the bare essentials and try to devote most of the time to control measures.

Since 1930 there have been many cases of serious termite damage in this part of the country. There are records of serious termite damage in this part of the country. There are records of serious termite damage in Cambridge, Mass., in 1876 and 1885, New York City in 1893 and 1909, Albany in 1900, Ohio in 1894 and 1896, and Baltimore in 1898. We have records of such damage in Connecticut as early as 1909. Termite damage in the North is not new, but the amount of damage is new.

The exact cause of the increase in amount of termite damage is unknown. There seems to be no evidence that termites are actually increasing in numbers. Dr. Snyder thinks that the increase may be due to the erection of a large number of susceptible buildings in infested regions. Changes in design in recent years have actually made houses more susceptible to termite entry. These changes include construction close to grade level, earth-filled masonry porches and terraces, unexcavated areas, and finished basement game rooms.

Even with the enormous increase in numbers of infested buildings, only a very small percentage of those infested has been found to be seriously damaged. In a recent survey in Connecticut we found that less than four per cent of the buildings were seriously damaged and all of these were more than 50 years old. Many modern buildings were heavily infested and there was every indication that serious damage would occur in the near future.

The question of exaggeration of termite damage deserves comment. Entomologists have frequently issued statements that both the amount and nature of termite damage has been exaggerated. These statements are true, but they have been misconstrued. Architects, building inspectors and builders have interpreted them to mean that termites are so rare that there is no real need for termite-resistant construction. Owners of infested buildings frequently conclude that nothing should be done. On the other hand, termite control operators frequently over-emphasize the dangers of termite infestations in individual buildings. The danger of sudden collapse has also been exaggerated. It is almost inconceivable that a dwelling house would collapse without ample warning. There may be such a danger in a warehouse where load changes are frequent, but here too there should be evidence of infestation long before the building is weakened seriously.

Every house will not be infested by termites, even though practically every one is susceptible to termite entry. Every infested house will not be damaged seriously. In other words, each case must be considered separately, strictly according to the facts. There is no question whatever that the termite situation is serious, but we must not make it more serious than the facts warrant.

Biology of Termites

Only the eastern subterranean termite **(Reticulitermes flavipes Kollar)** will be considered here, because it is the only termite present in this region. These termites are about a quarter of an inch long when fully developed, white in the worker and soldier castes and black as winged reproductives. They live socially in colonies located in moist soil near a supply of dead wood or other cellulose-containing material, which is used as food. The colony may be in moist wood near the ground line. The colony is not a compact unit with a royal cell, but is really a series of reproductive centers connected by runways. Colony location may be changed frequently, and colonies, except those in heated buildings, migrate below the frost line during winter.

The castes are as follows:

1. Workers—Feed all other forms and do all excavating and tube-building.
2. Soldiers—Theoretically protect the colony.
3. True queens and kings—Reproduce and are mobile through life.
4. Supplementary queens and kings—Mobile reproductives.

The "swarms" occur when numbers of nymphs (which resemble workers superficially) molt, develop wing pads, and molt again to form the black winged males and females. In order to form new colonies, these forms must find a food supply in moist soil, shed their wings, mate and start a colony. At the end of the first year such a colony would consist of from 6 to 12 workers and the king and queen. At the end of five years about 5,000 workers would be present under normal conditions, and this number can develop in one-half cubic foot of wood. The "swarm" does not remove many termites from the colony. Swarms occurring in buildings may be considered harmless except to indicate that the building is infested.

It is believed that queens of our termites seldom deposit more than 60 eggs a day.

Habits of Termites

Termites require cellulose for food. This is digested by protozoa and bacteria in the intestinal tract. They require moisture both for consumption and to keep the humidity high. They get this moisture from the ground or from wood that is constantly wet. They have no intelligence, but are able to locate susceptible points in building construction by constant searching. Individual termites do not consume much wood, but large colonies can do a large amount of damage.

Control

It is very natural to attempt to apply methods of control used for other insects to control termites. Several of these methods appear absolutely useless in killing termites: (1) fumigation; (2) use of poisoned baits; (3) spraying the outside of infested timbers; (4) use of poisoned paint, and (5) trapping. Other methods that have some value but which have not been established as satisfactory are: (1) use of poison dust injected into burrows, and (2) pressure-treatment of lumber in place.

The only successful principle applied to date has been the exclusion of termites from buildings by means of barriers. This method will, of course, prevent further entry, and it should kill those termites still in the building by cutting them off from their supply of moisture. So far as I know, everyone engaged in termite control will agree to this general principle. The argument arises over the types of barrier used to carry out the principle.

Before this is discussed, let us consider how termites enter buildings and what materials they can penetrate. Subterranean termites enter buildings at some point of contact, either direct or indirect, between the wooden portions of the building and the ground. Direct contact includes entry through wood actually in or on the ground (wooden posts and partitions extending through concrete basement floors, basement window frames, wooden porches, furring behind stucco over foundations, etc.). Indirect contact includes entry through cracks or hollows in foundations, by means of shelter-tubes constructed on foundations, or through earth-filled masonry porches.

Termites could be established by use of infested timber in house construction, but this is very unlikely. They could be introduced in fireplace wood, but this is also unlikely.

Termites do not establish a colony in buildings by flying in through open windows or doors, or by crawling in through holes or cracks in clapboards.

Barriers.

We are all agreed that in order to stop termites a barrier must be established. Before getting into the controversial phase, there are a few generalizations that can be made.

Termites can penetrate:

1. Lime mortar.
2. The ordinary masonry work of brick, stone, hollow tile, or hollow concrete blocks.
3. Tar and asphalt compounds.
4. Poisoned paint films.
5. Roofing felt.
6. Cracks in solid concrete.

Termites cannot penetrate:

1. Solid concrete without cracks, or solid unit masonry laid solid in cement mortar.
2. Wood treated by a standard pressure process, using standard or equivalent wood preservatives.

   They can, however, construct shelter-tubes over either concrete or treated wood.
3. Non-corrosive sheet metal, and they cannot construct shelter-tubes up over the edges of properly installed metal termite shields.

I have purposely omitted including chemical barriers established in the soil for consideration later.

Termite Shields

Although termite shields were used at least 40 years ago, and in all the intervening years no valid case of failure of properly installed shields has ever been

established, there still exists in the minds of many, grave doubt as to the effectiveness of shields. During the past few months we have re-examined every building which we knew to be shielded in Connecticut. We did not include new construction, but only infested buildings in which a shield has been installed. In all, there were 21 of these, and in no case had termites come up over a termite shield. In two cases termites had dropped down over shields immediately after installation, but this was stopped by the use of an inexpensive soil treatment, Just in case you think a soil treatment in such case is admission of inadequacy of shields, read our Bulletin 382, pages 22, 226 and 228. ((This was written in 1935.) In one case an improperly installed "shield" was of no value whatever.

Now, every one of these buildings was heavily infested by termites when the shielding was done. Some of them were almost in a state of collapse. And yet there has been no shield failure. Moreover, several shields did not comply entirely with our specifications.

This takes care of two criticisms of shields: (1) they are experimental, and (2) they do not work. Many operators have stated that shields cannot be installed in many buildings. A good builder can install a shield in any building from a skyscraper to a wooden shack. The final criticism is that of cost. Termite shields are expensive. In actual practice the cost varies from two to ten times the cost of a thorough chemical treatment in the same building. It is, of course, true that the value of many buildings is too small to justify shield installation. In actual practice, owners of buildings have in many cases installed shields.

It is my belief that the properly installed metal termite shield is the most effective and permanent method of termite control. This does not mean that shields are needed in every building, or even every infested building. It is my belief that shields should be used as follows:

1. In construction of termite-resistant buildings or termite-infested sites.
2. In construction of buildings the architecture of which makes them highly susceptible to termite entry (veneered buildings, stucco on wooden framework, filled terraces, unexcavated areas, etc.). The cost should be written off as insurance.
3. In heavily infested buildings of permanent nature.
4. In any infested building for which the owner desires complete and lasting protection.

Chemical Barriers

I have purposely left this discussion until the last and will try to give as complete and impartial a discussion of it as is possible in the time available. The idea of establishing a chemical barrier to exclude termites is not new. It has been tried for at least 40 years, and frankly, the results have not been very encouraging. The California Termite Investigation Committee, which was reasonably unbiased, reported: "Numerous materials and methods have been recommended for this purpose by various persons and in various regions. For no one method or material, however, is there available any satisfactory body of experimental data or field observations, nor is any one of them accepted practice. Indeed, these recommended methods have been abandoned by their authors in several instances, at least, in favor of structural methods, because of lack of authentic information as to the effectiveness of such treatments, as well as on account of the health hazards and other unfavorable features involved in the use of the more widely advocated materials and methods." You are, of course, familiar with Dr. Snyder's repeated statement that soil treatments must be regarded as experimental. We, like other entomologists, have tried our own experimental materials, with the following results: (1) Phinotas oil has not been at all satisfactory; (2) paradichlorobenzene has been useless in several tests in New Haven; (3) orthodichlorobenzene failed in a test in Cambridge, Mass.; (4) sodium arsenite was apparently successful in one case when it was used in connection with shielding. We have started observations on soil treatments applied by commercial operators, but it is too soon to draw conclusions.

It isn't a very encouraging picture, is it? But we have established some facts. For one thing, materials used as fumigants fail because our soil temperatures are too low. The rock ledge situation in the western part of the state adds serious complications, and our heavy moist soil can be penetrated only with great difficulty. I believe that we have in Connecticut some of the most difficult surroundings to be found in the world. I have discussed this matter with several operators, and many of them have an immediate reaction: "What am I doing in the soil treating business? Is there no place for soil treatments?" Of course there is a place for soil treatments, and the fact that commercial operators have made successful treatments show that soil treatments are by no means worthless.

The status of soil treatments may be summarized as follows: (1) The chemicals suitable for use are limited by fire hazards, odors and danger of poisoning or spoiling wells. (2) The methods in use have been entirely arbitrary, rule of thumb methods, without a factual basis. (3) Unwarranted claims for success have been made. (4) Such treatments have been used in situations in which success would be almost a miracle. It is only recently that anyone had the ingenuity or persistence to start a sound scientific investigation of the fundamentals of the problem. I refer to the recent report of George Hockenyos and Harry Hyndman. This report by no means settles the question, but it represents the first really intelligent attack on the problem.

There are a few more vital questions for discussion. The first is, what is the place of soil treatment in the scheme of termite control? From actual experience covering a period of years, we submit the following:

1. Use in temporary buildings of small value.
2. Use in all cases of infestation in buildings commonly classed as "fireproof."
3. Use in minor infestations in buildings reasonable resistant to attack.
4. Use in moderate or heavy infestations in reasonably resistant structures in connection with certain structural changes.

In actual practice, this means that approximately 70 per cent of the infested buildings in Connecticut can be treated logically. Soil treatments are not suitable and I believe personally should not be used in buildings highly susceptible to termite entry. These include (1) old colonial houses with very porous stone foundations, (2) inexpensive wooden buildings built directly on the ground, (3) large brick buildings with a dead-air space in the masonry wall, (4) buildings on foundations of hollow concrete blocks (unless laid on a concrete base above grade level), and (5) structures on wooden supporting posts. The percentage of failures in these types of buildings is extremely high. It is my opinion that operators should accept such jobs only after making the owner understand clearly the exact situation.

Materials

Frankly, I do not know what materials are suitable for soil treatments in this part of the country. The material with the best record is arsenic in one form or another. Until more definite information is available it is impossible to list satisfactory materials. There are some limiting factors, however, that can be listed now.

1. The treating material must leave no offensive odor and release no toxic gas.
2. Arsenic must be used with care, especially on property using water from wells.
3. Inflammable material should not be used.

These limitations are self-explanatory, except for the toxic gas feature. Apparently the danger of arsine gas following use of arsenic is not a serious one. It should not be ignored, but cannot be settled until more information is available.

Methods

It is evident that soil treatments have more chance of permanent success if accompanied by certain structural changes. Some of the most successful firms have adopted the policy of insisting on the changes before a treatment is made. The minimum changes are:

1. Removal of wood in actual contact with the ground.
2. Provision for adequate clearance in unexcavated areas.
3. Replacement of wooden bearing posts with lally columns.
4. Reconstruction of wooden basement partitions.
5. Replacement of wooden basement window frames with metal frames.
6. Metal shielding to protect framework adjoining masonry porches.

Some operators feel that the use of these changes is an admission of the inadequacy of soil treatments. This is not the case. The changes simply help to insure the success of the treatment.

It must be remembered that termite control is a matter of individual cases. Each case must be considered separately and no two cases are exactly alike in all respects. Nothing can replace careful intelligent workmanship. Termites are persistent and they are apt to find any flaws in the work.

My real message to you is that you use a different approach to the problem. Instead of examining buildings simply to confirm the presence of termites and measuring the building for an estimate, examine it to find out where the termites are getting in and what must be done to keep them out.

Some Pitfalls to Avoid

(1) Incorrect diagnosis of termite damage. The work of carpenter ants and powder-post beetles should not be confused with termite damage.

(2) Incorrect identification of insects. During the past two years, operators have

(Continued on page 8)

identified the following insects as termites: (1) Crabro wasps, (2) psocids, (3) sow bugs, (4) lawn ants, and (5) pavement ants.

(3) What is the status of a tenant or a possible purchaser in regard to termite infestations? Try to avoid libel suits.

(4) What does your guarantee mean? Wouldn't you be better off with a service charge instead?

Treatment of Timbers in Place

There is even less of a background for treatment of timbers in place than for soil treatment. It is difficult to treat wood even in pressure tanks, and much more difficult to treat it in place. If the wood is wet, non-aqueous carriers will not penetrate it. If it is dry, aqueous carriers do not work well. If timbers are infested by termites, any treating fluid follows the burrows rather than saturating the wood. Some of the treating fluids are inflammable and should not be used in buildings.

While this type of treatment has been advertised as highly successful, it must be remembered that the company using it also uses structural changes and soil treatment in addition to the timber treatment. The success may be due to the combination rather than the timber treatment alone.

Grasshopper Eggs Are Ready to Hatch Trouble

Farmers' troubles in the West this summer are going to be little ones—billions of 'em. Most recent field surveys by Department of Agriculture workers indicate that the heavy stocks of grasshopper and Mormon cricket eggs in the soil have come through the winter in fine shape. Now they are getting ready to hatch into hungry mischief. —Science News Letter.

It is true that to a great extent sparrows are pests, but they also do much good. Ornithologists and naturalists have found that during a single season a pair of these birds will feed their young about 3,360 caterpillars, by actual count. They also devour hundreds of insects and butterflies which would have laid eggs to produce caterpillars.

Pacific Coast P. C. O.'s Hold Conference

WITH typical California progressiveness and enthusiasm, the first Pacific Coast Pest Control Operators Conference was held in Jordan Hall on the beautiful Stanford University campus March 28-31. The total registration was 78, far exceeding the expectation of even the most enthusiastic P. C. O. This Conference, under the chairmanship of Jess M. Miller of Hollywood, and directorship of Dr. R. W. Doane, Professor Emeritus of Entomology at Stanford University, and sponsored by the California State Pest Control Association, and the National Pest Control Association, and Stanford University, represents a forward step which will mean much to the profession of pest control on the Pacific Coast.

In addition to Professor Doane, the following technical advisors appeared on the program: W. B. Herms, E. O. Essig, E. Fritz, E. C. Van Dyke, and W. S. Hoskins of the University of California; J. J. Davis of Purdue University, Lafayette, Indiana; C. D. Duncan of San Jose State College; C. V. Taylor and P. J. Hanzlik of Stanford University, and A. J. Cox of the California State Department of Agriculture. A number of commercial pest control operators were also contributors to the program.

The Monday session was opened by Professor Doane who welcomed the group with appropriate words which assured everyone present that they were at home. Professor Doane emphasized that sound training in the fundamentals of entomology is requisite for the pest control operator.

Professor Davis discussed the "Economic Importance of Insects," prefacing his talk with comments on the place of conferences in the routine of the pest control operator. He pointed out that conferences such as the one being held were purely educational while conventions are primarily for transacting the business of the organizations with social and educational features secondly. Summing up, Professor Davis said: "Briefly, I consider attendance at the national and state conventions a duty and essential for efficient business operations, while conferences such as this are optional and must be considered as purely educational and made available through the cooperation of state and national organizations with state and federal officials." Professor Davis reviewed the P. C. O. conferences held at Purdue University, explained the basis for conferences, and how they can be made of greatest value to the commercial operator.

Professor Hermes gave a most valuable lecture on "The Relation of Insects (and other Arthropods) to Public Health" and provided information which is vital to the success of every pest control operator, and which every operator will be able to use in his work.

The last talk was given by Professor Doane who discussed certain major timber borers. The last hour of each day's session was given over to a discussion and questions on the problems discussed during the day.

The Monday evening session was a highlight of the conference, Ray Lovejoy of the Western Exterminating Company of the Western Exterminating Company and Regional Vice-President of the National Pest Control Association of Los Angeles, giving a very complete and vivid analysis of a pest control business, under the following general heads: Securing of Business; Holding the Business; Attitudes in Event of Losing the Account; Office Systems, Inventories, and Mechanics of the Business, and Relationship Between Employer and Employee.

The second day (Tuesday) of the conference, opened with an exposition on insect structures, life histories, and habits as they relate to insect control, by C. D. Duncan. "Unless pest control operators knew what they were working with, they would fail in efforts to control either the pest or its effects," he said. Further, "Struc-

GROUP PICTURE OF FIRST PEST CONTROL OPERATORS' CONFERENCE

Front row, left to right—O. W. Dickens, R. W. Hunt, L. R. Alderman, Mrs. E. G. Mills, W. B. Tanner, Mrs. J. M. Miller, E. G. Mills, R. B. Loibl, Sr., C. D. Duncan, E. O. Essig, A. E. Mickelbacker, L. W. Christensen, G. A. Rader, Wilbur F. Smith, R. E. Hackley.
Back group, in order, left to right—J. M. Kuehne, G. E. Wilson, Harry Kyle, O. H. Nelson, N. N. Gay, A. B. Lemmon, H. Montgomery, J. A. Gooch, H. J. Davies, E. A. Roberts, E. S. Entriken, Charles Mollard, J. K. Hougham, E. H. Armstrong, H. A. Browning, Wm. Hogan, J. W. Pencile, A. J. Cox, R. W. Doane, S. H. Pencile, J. J. Davis, T. W. Payne, A. T. Parsons, N. E. Raleigh, H. E. Burke, D. L. Anderson, A. L. Forde, H. B. Noble, E. F. Smith, S. S. Heaton, E. G. Jackson, C. P. Cain, H. E. Bradley, O. L. Burritt, J. N. Stone, W. K. Davis, L. Bancroft, G. W. Peterson, Ray Bancroft, J. M. Miller, P. J. Merideth, V. H. Montgomery.

tural studies underlie the study of insects and the solution of problems concerning them—structural studies lead to a knowledge of the insect's habits without which it is impossible to prescribe methods of control." As an example of the importance of this study Professor Duncan spoke of housewives' efforts to eradicate the clothes moth. "Because they are unable to identify the clothes moth, housewives spend their time killing the common outside variety of moth while it is only rarely the real clothes moth is killed. Prof. J. J. Davis followed with an explanation of the fundamentals and bases of insect control. Dr. C. V. Taylor illustrated with moving pictures some of the important biological studies being conducted by the biologists of Stanford University. Prof. E. O. Essig presented an interesting and informative illustrated lecture on common household pests. In a discussion of "Wood Rots and Their Control," Dr. E. Fritz demonstrated the importance of dry wood rots, causes of rots and controls by chemical and structural methods. Incidentally, Doctor Fritz gave the requirements of an ideal chemical preservative as follows: toxic to insects and fungi, permanent, reduce inflammability, no discoloration, no odor, permit varnish, paint or other finishing, and low cost.

The principal and most virulent California pest is the familiar Black Widow spider, the severity of which has been often overstated, Dr. Herms said. He pointed out that the Black Widow injects a neurotoxic poison which is immediately assimilated by the nerves. "It is useless to treat a Black Widow bite the same way as a rattlesnake bite," he said.

In approximately three hours following a Black Widow bite, the victim is seized with severe abdominal pains, sometimes mistaken for acute appendicitis. Appendectomies have occasionally been performed because of the similarity in symptoms, the scientist said.

A doctor's aid should always be sought for Black Widow bites. Pending the doctor's arrival the patient should apply iodine to the wound and soak the bitten extremity in hot water. Black Widow bites are rarely fatal and the poison will dissipate itself after a few days, Dr. Herms said.

No other spider found in California, including the so-called "California tarantula" is nearly so virulent as the Black Widow. However, there are a host of other annoying insects, including the Northern California road beetle, which sometimes flies into the eye, maggots which attack the nasal sinus, sheep flies which do likewise, and the various stinging ants, wasps, bees, scorpions, mites, ticks, "kissing bugs," the California deer tick and the spotted fever tick.

In addition, public health may be menaced by rats, ground squirrels and chipmunks, which serve as carriers of disease hosts, by any number of insects and other pests which play a part in the biological life cycle of bacterial and similar infective agents, and by the common house fly and other disease carriers which infect milk and food supplies, spreading cholera, dysentery, and typhoid, Dr. Herms said.

Tuesday evening was left open for business and pleasure requiring the least resistance.

The first topic of the Wednesday session was given by Dr. P. J. Hanzlik on "Health Hazards in Pest Control Poisons." The dangers of various chemicals used by pest control operators were explained and precautions to minimize these dangers were emphasized. Dr. Hanzlik said the opinion of many operators that the small amounts of poison left on dietary objects was too minute to harm humans was false, and that it was the continued consumption of these small quantities which caused the health problem which he described as chronic intoxication.

Differing from acute attacks caused by large doses of poisons, Dr. Hanzlik described the symptoms of the chronic intoxication as a general impairment of health, later developing more specific manifestations of various types of poison. This was followed by a talk by Professor Davis on the "Identification of Adult and Immature Forms of Insect Life." After discussing the fundamentals, purposes and value of insect classification, Professor Davis brought out the characters to distinguish different groups by means of lantern slides. A series of specimens representing all orders were on exhibit in an adjacent room. The identification of immature forms was accomplished by means of sets of specimens provided. The afternoon was given over to a discussion of wood-infesting insects. Dr. E. C. VanDyke discussed the several beetles which infest woodwork of buildings, followed by an able discussion on "Termites," by Professor Herms. Wallace B. Tanner of the California Termite Control Company, Los Angeles, discussed in detail the methods to be followed in making a termite inspection and report. His able presentation and comments by different commercial operators, demonstrated the variation in inspection procedures and the need of standardized inspection methods.

Wednesday evening Wilbur F. Smith, of the Alderman Company, Pasadena, and

(Continued on Page 10)

Headquarters for the Seventh Annual Convention of the National Pest Control Association, October 24-25-26.

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Can a Lease Be Broken Because of the Presence of Bedbugs?

By C. NORMAN DOLD

THE LOG prints in its entirety the opinion of Justice Hugo M. Friend of the Appellate Court of the State of Illinois because it is of interest to all pest control operators and answers with a degree of finality a question which is frequently asked.

This is a reversal of the case as tried in the Municipal Court before Judge Kasper who ruled for the owners of the property, but on appeal this decision was reversed and it was found that tenants can break a lease and move when they deem such action necessary because of the continual presence of varmints.

In this instance an apartment building is involved and it was held that the bedbugs were coming in continually from an adjacent apartment. It would be interesting to ascertain some time how the courts would rule in the case of a lease on a single family house where it could not be said the pests were coming in from the neighbors.

The high point in Justice Friend's decision is obviously the portion which reads as follows:

"Our courts have held that a constructive eviction may take place even though there be no actual physical expulsion, where acts of a grave and permanent character, amounting to a clear indication of intention on the part of the landlord, are committed so as to deprive the tenant of enjoyment of the premises."

The complete text of the opinion delivered by Justice Friend is as follows:

APPEAL FROM MUNICIPAL COURT OF CHICAGO, 39253.

A. L. SCHIFF,
Appellee,
vs.
J. A. PECK and KATIE PECK,
jointly and severally,
Appellants.

MR. JUSTICE FRIEND DELIVERED THE OPINION OF THE COURT.

This appeal presents for consideration the question whether tenants may abandon an apartment occupied by them under a written lease without the payment of rent, on the ground that the presence of bedbugs in large numbers rendered the premises uninhabitable and thus furnished the basis for a constructive eviction.

A. L. Schiff was the owner of a six-apartment building at 6640 Parnell avenue, Chicago. September 1, 1933, he leased a four-room apartment on the third floor of the building to J. A. Peck and Katie Peck for two years ending August 31, 1935, at the stipulated rental of $35 a month. The Pecks occupied the demised premises and regularly paid rental therefor until July 31, 1935, when they abandoned the apartment, as they claim, because the influx of bedbugs in large numbers from other parts of the building rendered it uninhabitable. Thereafter, August 15, 1935, plaintiff procured a judgment by confession in the sum of $47.75, representing rental for August, 1935, costs and attorney's fees. Thereafter defendants moved to vacate the judgment and had leave to appear and defend. By stipulation of the parties, trial was had by a jury of five, resulting in a verdict finding the issues against plaintiff. Thereupon plaintiff moved for a judgment *non obstante veredicto*, which motion was sustained by the court. The amount of the judgment by confession was reduced from $47.75 to $36.67, and judgment entered in the latter sum for plaintiff. This appeal followed.

Defendants' position to vacate the judgment which was allowed to stand as their affidavit of merits, alleged in substance that prior to the expiration of the lease defendants discovered in the rooms, halls, floors and walls of their apartment and in the beds and upon their clothing,

"Certain vermin, commonly known as bedbugs; that bedbugs were found in other parts of the building and particularly in the second apartment, directly beneath that of the defendants, before the bedbugs entered the apartment of the defendants; that the presence of these bugs was immediately brought to the attention of the landlord, who, after the lapse of about two weeks, made some attempt by the use of kerosene to exterminate the bugs;" but without success, and instead the bugs "continued to grow worse and grew in number so that it became necessary for the defendants to spend about $40 to have the bugs exterminated and also report the matter to the health department of the city of Chicago; that the bugs were never eradicated, so that by the last of July, 1935, the apartment was so infested that it became uninhabitable and the defendants were compelled to move."

There is abundant evidence in the record to sustain the contention that the building was infested with bedbugs, and that notwithstanding the ordinary efforts made by Mrs. Peck to exterminate them in her own apartment, they entered from the apartment below and other parts of the building, through the walls and floors, to such an extent that the Peck premises became extremely offensive, uncomfortable and rendered unfit for occupancy. The landlord was notified of this condition and atttempted to exterminate the bugs by spraying kerosene throughout the building, but without results. The Pecks notified the board of health of the city of Chicago, and notice was served on plaintiff to exterminate the vermin, but nothing further was done. Defendants testified that the bugs crawled around on the floor in the various rooms, on the ceilings, and were present in the bed and closets and on their clothes, and that they could no longer remain in the apartment with comfort.

Our courts have held that a constructive eviction may take place, even though there be no actual physical expulsion, where acts of a grave and permanent character, amounting to a clear indication of intention on the part of the landlord, are committed, so as to deprive the tenant of the enjoyment of the demised premises. (Kensy v. Zimmerman, 329 Ill. 75, citing Gibbons v. Hoefeld, 299 Ill. 455, and Keating v. Springer, 146 Ill. 481, where it was said (in the Keating case, *supra*), that,

"The landlord, without being guilty of actual disturbance of the tenant's possession, may yet do such acts as will justify or warrant the tenant in leaving the premises. The latter may abandon the premises in consequence of such acts, or he may continue to occupy them. If he abandons them, then the circumstances which justify such abandonment, taken in connection with the act of abandonment itself, will support a plea of eviction as against an action for rent."

We find no bedbug cases in Illinois, but defendants' counsel cites two authorities in sister states which are precisely in point. The first of these is Delamater v. Foreman, 184 Minn. 428, wherein the presence of bedbugs in the defendant's apartment rendered it untenantable and it was held to be a valid defense in an action brought by the landlord for the payment of rent. The court there said (pp. 429, 430):

(Continued on page 11)

Pacific Coast P. C. O.'s Hold Conference

(Continued from page 8)

President of the State Structural Pest Control Board, explained in detail the California Structural Pest Control Law.

The initial talk on the Thursday program was by L. R. Alderman of the Alderman Company, Pasadena, on the "History of Commercial Pest Control." Dr. A. J. Cox, head of the Division of Chemistry of the State Department of Agriculture, discussed in detail the provisions of the California Economic Poisons' Law and those features of the law which applied more directly to the pest control operator. In his talk "Chemistry and Modern Insecticides Used in Pest Control," Dr. W. S. Hoskins traced the history and development of insecticides, the effect of physical and chemical properties upon toxicity, and the latest developments and future trends. The afternoon sessions were given over to new fumigants and fumigation problems. J. N. Stone of the American Cyanamid Company, discussed hydrocyanic acid gas, E. G. Mills of the Pacific Exterminator Company, San Francisco, handled the chloropicrin problem and Mr. White of the Dow Chemical Company explained the new developments in methyl bromide fumigation. The clinic following was led by Wilbur Smith of the Alderman Company, Pasadena.

The conference ended with a banquet in the Stanford Union Building, with over 100 enthusiastic conferees and their wives attending. V. H. Montgomery, of Montgomery Pest Control, San Francisco, acted as toastmaster, who called on several for brief remarks after which a beautiful picture was presented to Jesse and Irene Miller for their untiring efforts in making the conference a success. The banquet and conference ended with an inspiring address on "The Four Fundamentals of Better Business," by Frank H. Beckmann of San Francisco.

A number of the papers presented at the Pacific Coast Conference will be published in The Log.

"There is much in and about such an apartment building far beyond the control of a tenant in one of the apartments. He cannot interfere with the walls, partitions, floors, and ceilings wherein the verminous enemy may propagate; nor can he interfere with the cracks and openings affording an opportunity of access from such walls, partitions, floors, and ceilings into the apartment. If the attack is sufficiently serious and comes from this source, it violates the landlord's implied covenant that the premises will be habitable. (Smith v. Marrable, 11 M. & W. 5; * * * Batterman v. Levenson, 102 Misc. 92, 168 N. Y. S. 197; * * *.)

"We are of the opinion that the evidence supports the finding of the jury that the vermin came from a source within the jurisdiction of the landlord under the rule stated.

"The evidence is also sufficient to show that the presence of the bedbugs in such large numbers caused the greatest discomfort and distress to plaintiff and his family; and, since it was, under the findings of the jury, due to defendants' fault, it was sufficient in law to constitute a constructive eviction, and plaintiff was justified in vacating the premises as he did."

In Streep v. Simpson, 80 Misc. N. Y. 666 (141 N. Y. Supp. 863), the tenant vacated the premises one month before the expiration of his lease, and when sued for rent defended on the ground "that the presence of bedbugs caused discomfort and distress and rendered the premises untenantable as living quarters," There, too, it appears that the landlord had made attempt to exterminate the bugs, without success, and that the bugs came from the apartment below defendant's. The court held (p. 668);

"An intolerable condition which the defendant neither causes nor can remedy seems to me warrants the application of the doctrine of constructive eviction. The rule in Jacobs v. Morand, 59 Misc. (N. Y.) 200, in regard to bugs and ants within the apartments, which can be dealt with by the tenant by processes known to all housewives, should not be extended to cover offensive and unbearable nuisances outside of the apartment. This tenant could not pull down the walls or the ceilings. He and his family ought not to be compelled to pay rent for an apartment in which they could not live."

The law is well settled that evidence cannot be considered in passing upon the question of the legal propriety of entering a judgment *non obstante veredicto*. Such a judgment "will not be rendered where there is substantially a material issue or a good defense * * *" but only in cases where it is clear that the defendant has no meritorious defense under whatever form his plea may be interposed. Where there is a conflict in the testimony, in actions at law, it is for the jury to weigh and determine the evidence admitted by the court as competent, and a trial court has no power, when a jury is not waived, to determine the weight and preponderance of conflicting evidence introduced to establish or disprove the facts. To do so would be an invasion of a defendant's constitutional rights to have the facts passed on by a jury. (Mirich v. Forschner Contracting Co., 312 Ill. 343, 356.) In passing upon a motion for judgment *non obstante veredicto* under the new civil practice act, the trial court has no more authority to weigh and determine controverted questions of fact than under the practice act of 1907. (Illinois Tuberculosis Sanitarium v. Springfield Marine Bank, 282 Ill. App. 14.)

Subsection 3c of Sec. 68 of the Civil Practice act (Illinois State Bar Stats., 1935, chap. 110) provides that,

"If the party in whose favor the verdict of the jury was rendered shall assign error in the Appellate or Supreme Court upon the order of the trial court entering judgment notwithstanding the verdict, and the Appellate or Supreme Court shall be of opinion that the trial court committed error in ordering or entering judgment notwithstanding the verdict, such court shall reverse such order and judgment and shall order or enter judgment in accordance with the verdict of the jury, unless it shall appear that there was error in the case that would have entitled the party in whose favor judgment notwithstanding the verdict was entered, to a new trial if such judgment had not been entered by the trial court, in which case a new trial shall be ordered."

A case in point construing this provision of the statute is McNeill v. Harrison & Sons, 286 Ill. App. 120. A careful examination of the record fails to disclose that there was any such error in the case as to have entitled plaintiff to a new trial, and, in fact, no such motion was made by plaintiff. The cause was fairly tried and the jury was fully justified in finding from the evidence that defendants' apartment became uninhabitable. Under the circumstances, it was error for the court to enter judgment *non obstante veredicto*, and it is therefore reversed and the cause remanded with directions to enter judgment on the verdict of the jury.

REVERSED AND REMANDED WITH DIRECTIONS. Sullivan, P. J., and Scanlan, J., concur.

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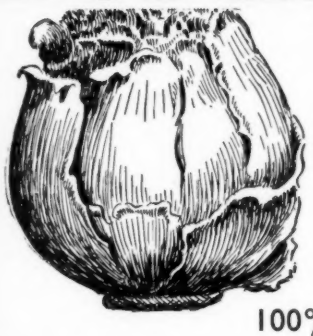

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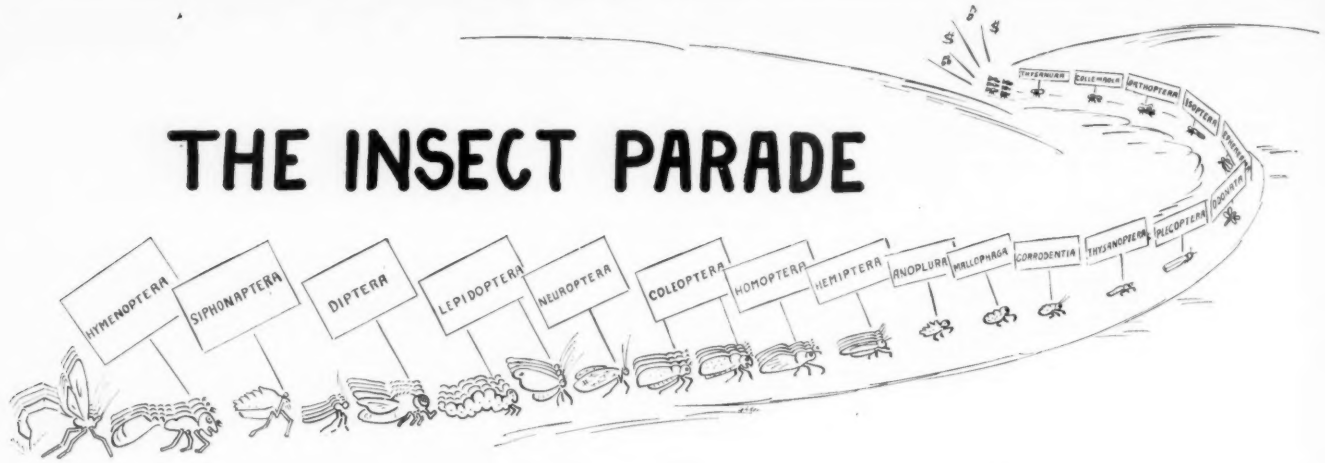


THE INSECT PARADE

Part XII

By PROFESSOR HOWARD O. DEAY,
Department of Entomology, Purdue University, Lafayette, Ind.

ORDER DIPTERA — THE FLIES
(Continued from April Issue)

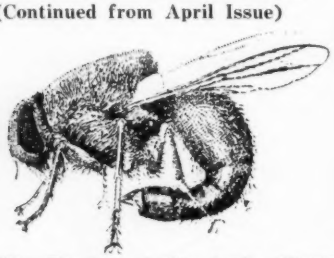


Fig. 120 — The horse botfly, family OEstridae (Froggatt).

The Botflies and Ox Warbles (Family OEstridae): The adults of this family resemble bees very closely (Fig. 120). The larvae are internal parasites of horses, cattle, sheep and other animals.

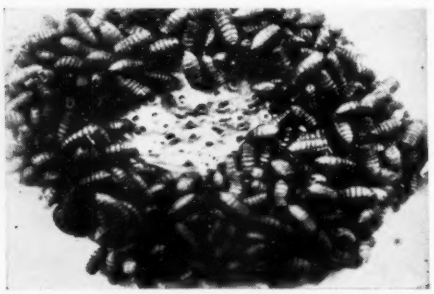


Fig. 121—Larvae of botflies attached to the stomach wall of a horse (U. S. D. A.).

Fig. 122—An ox warble in position under the skin of a cow, showing the hole cut for breathing and exit. (U. S. D. A.).

The horse bot larvae attach themselves to the walls of the stomach (Fig. 121) and intestines where they cause serious damage. The ox warbles burrow around through the flesh of cattle, finally cutting holes through the skin along the back (Fig. 122) through which they emerge. They not only cause serious pain to the animals but they also render the hides unfit for use as leather (Fig. 123).

Fig. 123—A piece of finished leather showing the holes which had been cut in it by ox warbles (original).

Fig. 124—A green bottle, or blow fly, family Calliphoridae. (N. J. A. E. S.).

The Blow Fly Family (Family Calliphoridae): Most of the members of this family are considerably larger than the housefly and are metallic blue or green in color. The common species are called green bottle (Fig. 124) and blue bottle flies and are found outdoors around decaying meat and garbage cans. They often enter houses in search of meat, cheese and other food stuffs upon which to lay their eggs.

The screw-worm fly, another member of this family, is a serious pest of live stock. It lays its eggs, or larvae (being viviparous) in wounds and sores on animals; the feeding of the larvae frequently causing serious injury or even death. Human beings are frequently attacked in the nostrils.

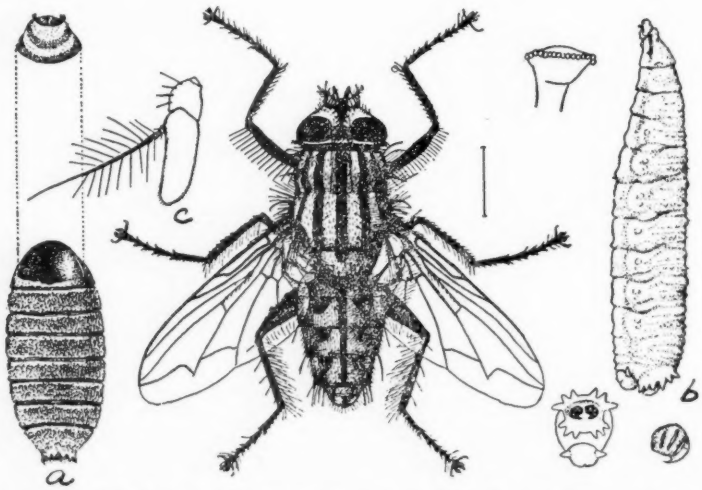


Fig. 97.—A flesh-fly, family Sarcophagidae: a, puparium; b, larva (maggot); c, an antenna enlarged. This is typical of the kind of antennae found in the Diptera which have short antennae (Suborder Brachycera). (N. J. A. E. S.)

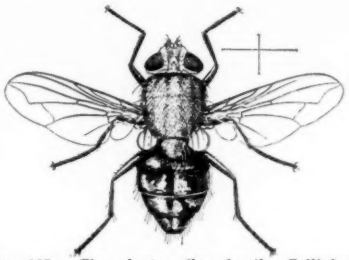


Fig. 125 — The cluster fly, family Calliphoridae (N. J. A. E. S.).

The cluster flies (Fig. 125) are dark colored, slow moving flies whose thorax is covered with soft, golden, woolly hair. They enter houses in the fall and gather in large clusters, especially in attics. It has a strange life history in that the maggot stage is spent inside the common earthworm.

The Flesh Flies (Family Scarophagidae): This name is misleading, for although some of them breed in meat and the bodies of dead animals as the blow flies do, most of them are parasitic upon other insects. The flesh flies (Fig. 97) are gray or silvery in color with four longitudinal black lines on the thorax. For the most part they are much larger than the housefly. The bristle on the antennae has hairs on the basal half only.

The Tachinid Flies (Family Tachinidae): Unfortunately there is no common name for the members of this family which is the most beneficial of all the Diptera. It is a very large family, over 1500 species being known from the United States. All of the species are parasitic upon other insects, principally upon caterpillars. Some of the adults resemble flesh flies, but in others the abdomen is shiny (Fig. 126). The antennal bristle is bare, a character which distinguishes them from the flesh flies and the members of the house fly family.

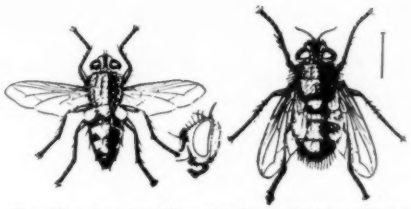


Fig. 126—Tachinid flies, family Tachinidae (Riley).

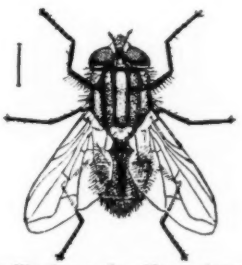


Fig. 127—The house fly (Musca domestica), family Muscidae (U. S. D. A.).

The House Fly Family (Family Muscidae): The members of this family are small to medium sized, grayish flies of which the house fly is a typical example. The antennal bristle is plumose to the very tip thereby differing from the flesh flies and the tachinid flies.

The house fly (Fig. 127) is the best known member of this family. It seems to be well named, for over 98 per cent of the flies found in houses belong to this species. As is well known, the maggots of house flies develop in horse manure, human excrement, and in decaying vegetable matter, especially in garbage cans. The adult is known to carry and spread the germs of many diseases, including typhoid fever, dysentery and other intestinal diseases as well as tuberculosis. It should be remembered that the house fly is not the sole carrier of these diseases as the mosquito is in the case of malaria and yellow fever. The house fly has sponging mouthparts (Fig. 99), being able to take up liquids that are exposed, and it, therefore, can be poisoned by "stomach poisons" used in the form of liquid baits. They are unable to "bite" or puncture the skin and suck up blood.

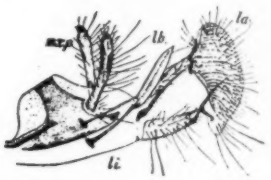
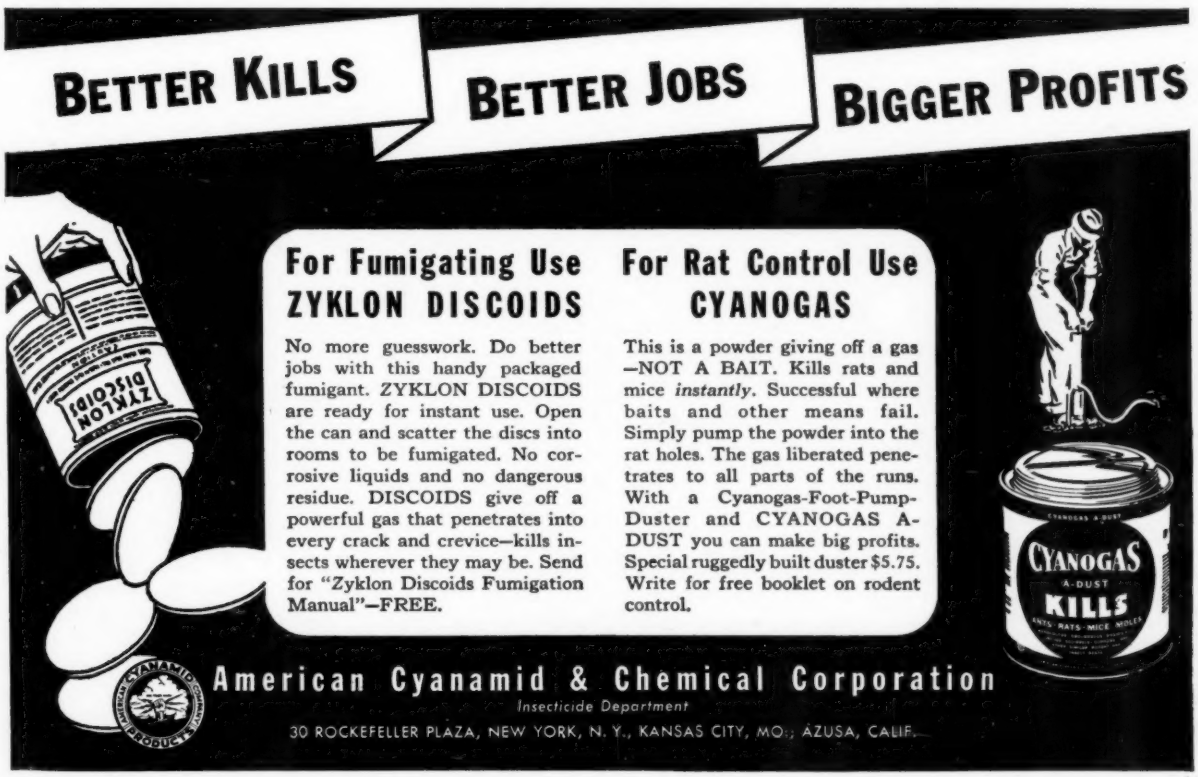


Fig. 99.—Mouthparts of a house-fly, the sponging type of mouth parts: la, labella. (Kellogg.)

The stable fly (**Muscina stabulans**) (Fig. 128) is a non-biting fly which sometimes frequents houses. It closely resembles the house fly but has a longer and more robust body. In spite of its common and scientific

(Continued on Page 14)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name, it is not common around stables and barns. It breeds in decaying vegetables, fruits and cow manure.

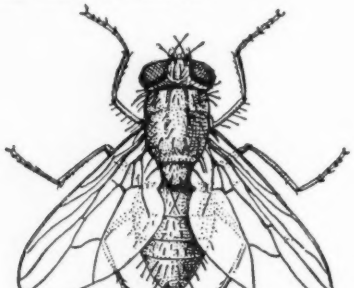

Fig. 128—The stable fly (Muscina stabulans), family Muscidae (U. S. D. A.).

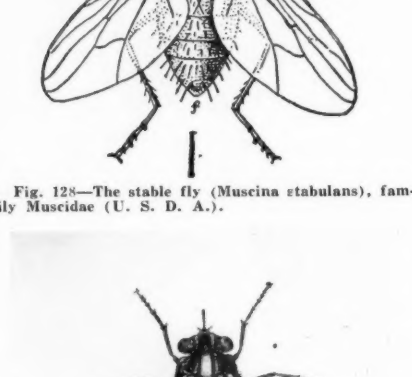

Fig. 129—The biting house fly (Stomoxys calcitrans), family Muscidae (U. S. D. A.).

There are two common species of Muscidae which are blood-suckers. They are the biting house fly (Fig. 129), sometimes called stable fly (**Stomoxys calcitrans**) and the horn fly (**Haermatobia serrata**). The biting house fly looks much like the common house fly, but it is slightly larger and has an awl-like beak with which it can pierce the flesh and cause severe irritation. It is principally a pest of live stock, but it will enter houses and attack man, especially in stormy weather. It breeds in manure and decaying vegetable matter, especially wet, rotting straw and lawn grass that has been cut and left in piles to decay. The horn fly is about half the size of the house fly. It rarely enters houses but is a serious pest of livestock. It derives its common name from the fact that it has the habit of clustering at the base of the horns of cattle. Its eggs are deposited in fresh cow manure.

The tsetse fly, which is the carrier of the causative organism of African sleeping sickness, is also a member of this family. It does not occur in America.

The Louse Flies (Family Hippoboscidae): The only species of this family of importance is the sheep "tick" (Fig. 130). It is a wingless, reddish brown fly, about one-fourth of an inch long. Its head is short and closely joined to thorax; the body is sac-like and leathery. In all it has the appearance of a tick but can be readily distinguished from them by the fact that it has but six legs while a tick has eight. It is one of the most serious pests of sheep. The life history is interesting because the sheep tick is viviparous (gives birth to young) and the young pupate within 12 hours after they are born.

The Decay of Wood – Its Cause and Control

By PROF. EMANUAL FRITZ, University of California

EDITOR'S NOTE: *Substance of an extemporaneous talk before the Pacific Coast Pest Control Operators' Conference, Palo Alto, March 29, 1938.*

THE decay of wood and products made from wood has been a problem ever since wood came into use. Over 100 years ago patents were granted for methods and preservative materials designed to prevent decay. Long before this, builders learned, in general, how decay may be controlled without preservatives, but the principles thus learned cannot be applied to all wood products. It is still one of the major problems of the wood user, more now than ever, because of the greater variety and the greater extent of wood uses. Destruction of wood by decay is more prevalent than destruction by termites, although the latter get the greater publicity. Decay, fortunately, is far easier to control than termites.

What Causes Decay

Decay is the work of low forms of plant life known as fungi (singular, fungus). The organisms "feed" on the wood substance. Some, apparently attack only the cellulose constituent, others the lignin. In other cases the result as to servicability of the wood is the same. Some fungi work only in the heart wood of living trees, others limit their activity largely to products of wood such as posts, poles, cross tiles, houses, bridges, etc. Some fungi are able to kill living trees, but these fungi are of no interest after the tree is cut and its lumber product put into use.

Fungi destroy wood by means of enzymes secreted by their hyphae. The enzymes are soluble ferments. They transform the wood substance into substances the hyphae are able to assimilate. The new substances nourish the fungi and promote their growth. The action of the enzymes on the wood is of a chemical nature, somewhat like the action of gastric juice on foods taken into the stomach. Under the microscope it looks like corrosion of the cell walls of the wood. The hyphae are extremely fine threads. They constitute the active part of any wood-destroying fungus. Collectively these threads are known as mycelium. Sometimes we see thick felt-like masses or sheets of mycelium in cracks. Fungi, like higher plants, go to fruit at a certain stage in their development. The fruit takes the form of a mushroom-like growth known as a sporophore or fruiting body. The fruiting body may be thin and flat, hugging the wood closely for its full length and width (resupinate), or it may be shelf-like similth to a mushroom or the common conks found on standing trees. These fruiting bodies in turn have fine slits, or gills, or they may have very small pores. In these gills or pores are borne the spores which correspond to seeds in higher plants. The spores are very minute and are produced in great numbers. It is through the spores that fungi get distributed. However, a piece of decaying wood can infect another without spores.

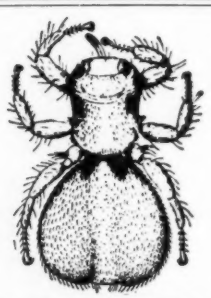

Fig. 130—The sheep "tick," family Hippoboscidae (Ky. A. E. S.).

(To be continued in the May issue)

Conditions Necessary for Decay

Certain environmental conditions must be established before the fungi can thrive. If the sum total of these conditions is very favorable the fungi can grow very actively and decay will be correspondingly rapid. If any one of the required conditions is below the minimum required to sustain them the fungi may become dormant or may die, and decay is checked.

The required conditions are:

1. Warmth
2. Air
3. Wholesome food
4. Moisture

Moderate warmth promotes activity of fungi. Below a certain limit the fungi become dormant; above a certain temperature they are killed.

Air is a necessity. If deprived of air the wood-destroying fungi cannot get started, or, if already started and later deprived of air, they are killed. The butts of telephone poles are often so firmly imbedded that insufficient air is available and decay proceeds very slowly or not at all. Likewise the submerged parts of piling will not decay largely because the water excludes the necessary air.

Wholesome food is furnished by the wood itself. However, if the wood is naturally impregnated with a chemical that is injurious to fungi, decay is very much retarded and some fungi succumb. The heartwood of such woods as walnut, white oak, locust, cypress, redwood and cedar contain such inhibiting chemicals. It is due to these chemicals that these woods are so durable. Conversely it is because of the absence of such natural preservatives that other woods like cottonwood, basswood, white fir and the sapwood of all commercial woods are so perishable. If it is desired to increase the resistance to decay of a natural resistant wood or for making a perishable wood highly resistant, it can be accomplished by impregnating the wood with an "artificial" preservative, for example, coal tar creosote, zinc chloride, copper sulphate and others.

A certain amount of moisture is absolutely necessary to promote the growth of fungi and hence speed the decay of wood. If there is too little moisture, under 20 per cent based on the oven-dry weight, the growth of fungi cannot proceed. If there is too much water, the fungi are "drowned out" because of the exclusion of air. Obviously one way of controlling the spread of decay is by keeping wood dry.

Most Important Wood-Destroying Fungi

There are a great many wood-destroying fungi. In general their behavior and their results are the same. They vary as to the species of wood they find most palatable, possible because of the difference in the inhibiting chemicals found naturally in them and in the ability of each species of fungus to adjust itself to these chemicals. They vary also as to the degree each of the aforementioned conditions must be met. Two of our commonest wood-destroying fungi are the German house fungus **(Merulius lachrymans)** and the common dry rot **(Poria incrassata).** Both of these are of the "dry rot" type. Incidentally this common name is responsible for the belief that the fungi attack **dry** wood. The term is hardly correct because dry rot fungi require large amounts of water while active. The dry rot characteristic is not manifested until the affected part is completely decayed and allowed to dry out. The specific name—lachrymans—of the German house fungus is indicative that it requires much water. It signifies tear drops.

As already noted the common fungi are so nearly alike in their habits and effects that the same precautions and the same control measures apply to all.

The Control of Decay

Knowing what conditions promote the growth of fungi, it is natural that we should try to control decay by making any one or all of these conditions unfavorable. It is too difficult and nearly always impracticable to control air and warmth, so we disregard them and work on the food or the moisture requirements.

Where conditions for decay are normal, a naturally resistant wood—cypress, cedar or redwood—should be used. Where the conditions are extra favorable, the wood should be pressure-treated with a dependable poisonous preservative. If the wood can be kept dry, no preservative treatment is necessary. In a building, decay possibilities are negligible if very simple precautions are taken to keep the wood dry. Kept dry, wood should last hundreds of years. Preservative treatments are additional precautions, of course, but their expense is not warranted if the wood can be kept dry. Occasional wetting, as by rains is sufficient to occasion enough drying to inhibit the progress of decay.

Some of the precautions that should be taken in ordinary building construction are these:

1. Design the structure so that rain water or garden sprinkler water is promptly drained off and not diverted into joints to form reservoirs.

2. Set the mud sill on a concrete foundation one foot or more off the ground.

3. Provide plenty of ventilation in the substructure.

4. Build according to the future grade as demanded by gardens, lawns, walks, etc., and not according to original grade. Many bad cases of decay follow a raising of the earth level enough to cover the wood.

5. Permit no building debris to pile up under the structure to make contact between the ground and the structural members. Likewise, check the work of those who excavate for pipes, that the earth is not piled against any wood portion.

6. Permit no woody debris, newspapers, or fuel wood to remain long in one spot on the bare ground in basement.

7. Where it is possible install tile drains around foundations. They are worth ten times their low cost.

8. Remove all form lumber from foundations. Concrete steps, front and rear, should never be so built that the space beneath cannot be entered to remove form lumber. This is another prolific source of infection.

9. Repair leaky pipes without delay.

10. Never imbed nailing strips or sleepers in concrete floors unless heavily treated.

All of the above are very simple. None is costly. Some represent merely good housekeeping. They all operate to keep moisture from unprotected wood. If followed, one need not worry about decay. In fact, if decay is ever found in a house, 99 times out of a hundred it can be said to be due to ignorance or carelessness.

But suppose the wood cannot be kept dry, as for example fence posts, cross ties, etc. The only recourse here is to use one of the naturally durable woods mentioned above. If the conditions for decay are so exceptionally favorable that even these woods cannot serve well, then one must resort to preservative treatment on any wood at all that possesses the necessary strength. In this way many cheap woods can be elevated to superiority.

These are important precautions to be observed in treating wood with a preservative. They concern both the chemical and the method of its application. The standard wood preservative, with 100 years of experience behind it, is coal tar creosote. It is objectionable for some uses because it is black, smeary, and cannot be painted over. Also, it increases the fire hazard. The next most

(Continued on page 16)

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common material is zinc chloride. It also has 100 years of use to substantiate its effectiveness, however, it is not permanent where leaching is likely to occur and it is somewhat corrosive to metals. A few years ago its resistance to leaching was improved by the addition of sodium dichromate and is now sold as chromated zinc chloride. Service records are not extensive enough to fully substantiate the belief that leaching has been corrected. In addition to the above standard materials are many proprietary compounds. Some of them give promise of real service, others should be shunned. The aim in devising most of the proprietary compounds was to develop something that would be as effective as creosote but would not have its shortcomings. Some of the proprietary compounds reduce inflammability materially and therefore have an added advantage.

Having settled on the chemical to be used, its method of application is next up for consideration. Painting and spraying are of questionable merit and should be resorted to only under special conditions and after competent advice. Dipping in hot baths is much better than painting, but is not nearly so effective as a pressure treatment. Pressure treatment requires such elaborate equipment, that the buyer cannot do it himself. In recent years, however, some lumber yards have started carrying stocks of such treated material. This practice should be encouraged. Pressure treatment assures deep penetration, sometimes more than one inch. Knowing that only the outer inch is protected should be sufficient warning to the builder, who must saw, fit and frame the lumber for use, that every cut exposes untreated wood. Such exposed surfaces should be given heavy applications of preservative. On large jobs, all timbers should be bored and framed before pressure treatment.

Decay is a natural process of nature. It requires only intelligent use or care of wood to prevent it.

American Mosquito Spray Effective Against the Tsetse Fly

Chemical combat means, invented in America, promise to give victory to white men in Africa on one of the most desperately contended fronts in all mankind's widespread war against insects—the tsetse fly campaign.

These insects, bearers of the deadly African sleeping sickness to human beings and scourges to livestock as well, flee, as they would from hellfire, from a spray originally developed for the control of New Jersey mosquitoes. The spray is the invention of Dr. J. M. Ginsburg, biochemist of the New Jersey Agricultural Station, Rutgers University. It consists of substances extracted from pyrethrum, dissolved in light petroleum oil.

Discovery of the high value of the New Jersey larvicide as a tsetse repellent was made by an American expedition in Africa, the Morse Museum African-Asiatic Expedition. British authorities in Tanganyika Territory, which is especially afflicted with tsetse flies, have shown a keen interest in the New Jersey compound, and a small quantity has been sent to them by Dr. Ginsburg, for testing purposes.

Mrs. Julie B. Morse, in charge of research for the Morse Museum expedition, writes enthusiastically of the success of Dr. Ginsburg's mixture, as contrasted with the poor results obtained with earlier repellents. She states:

"We have decided that the New Jersey mosquito larvicide would be a boon to Africa in many ways; to spray cattle that have to be driven through the tsetse country; for those poor isolated district officers and game rangers who live where the tsetse is dreadful; and for those who travel in the fly-infested areas."

How the Jersey-made mosquito killer was used in distant Africa was described in part by Mrs. Morse as follows:

"We spray the interior of the tent with a small hand sprayer of the usual house type, and nothing enters. Or rather, the tsetse make a tentative fly-in and then, deciding it is no place for them, out they go. This one spraying will protect the interior of the tent for at least half a day.

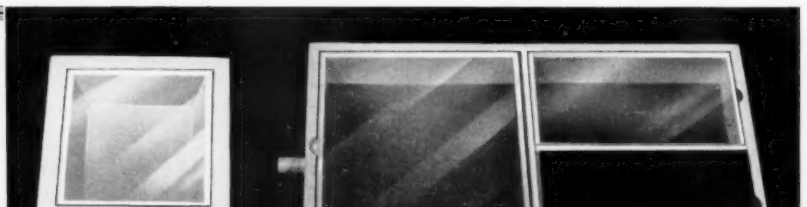
"We spray the mess tent, which is open on all sides, and this has to be done about once an hour or twice during a meal to be satisfactory. We spray our faces, stockings, and exposed parts—and have perfect comfort."

—Science News Letter.

A deer tick was immersed in salt and alum solution for 2 weeks—then placed in sulphuric acid and salt for 48 hours—then dipped in boiling water—and it still lived. —Robert Dycke, Dalhart, Texas.

"A jeer and a sneer never proved anything yet."

LIVING INSECTS



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The Pest Control Operator as an Aid to Public Health

By F. M. HALL, M.D., Assistant Medical Adviser, Purdue University, Lafayette, Indiana

EDITOR'S NOTE: *The following address was delivered by Dr. F. M. Hall at the banquet meeting of the Purdue Pest Control Operators Conference. More and more the Medical Profession is encouraging our industry to realize the importance of our industry in matters of health—a secondary line in defence of public health.*

A Vanishing Menace

THE historical records of this world of ours are filled with the stories of fearful disasters. Earthquakes, volcanic eruptions, winds, floods, fires, famines, wars, pestilences—all have seemed to conspire to destroy man and his works. Of all the dire disasters which have afflicted mankind in past ages, pestilence has seemed the most dreadful and unavoidable.

Until within a comparatively few years there has been no scientific knowledge concerning the cause of epidemic diseases. Nobody knew from whence they came, how they were spread, or what influenced their disappearance. There is no wonder that unreasoning fear seized the populace when an epidemic threatened; and that all who were able to do so sought safety in flight, leaving the less fortunate to their fate.

It is perfectly natural that the supposed causes of pestilence should have been determined in terms of human relations and activities. Jealousy, hatred, wrath, and revenge were motives which were supposed to actuate the infliction of diseases upon mankind. In Greek mythology Apollo slew the man-eating python, and became the sender of pestilence; while Aesculapius, learning the healing art from the serpent, became the god of healing. In the Indian mythology Rudra lets fly the arrows of pestilence. The sacred writings contain records of the visitation of numerous destructive epidemics upon the Hebrews and their adversaries as an evidence of the displeasure of Jehovah, and many persons even now hold to the belief that the occurrence of disease or misfortune is a direct evidence of divine wrath.

In the causation of pestilential outbreaks the influence of the "natural forces" was largely credited with being an important factor. Astrology was a widely studied science in the past, and the belief was general that the astral world largely controlled the terrestrial. Many writers stress the fact that epidemics followed the conjunction of certain planets; and comets, meteors and eclipses were considered potent agents in the development of pestilence. Hippocrates held that every physician should be versed in astrology.

Thucydides, in describing the Plague of Athens in 430 B. C., was the first writer on record to suggest the probability that epidemic diseases were directly transmitted from one person to another. But even his contemporary, Hippocrates, the father of medicine, failed to accept this statement as true, and it was not until 200 A. D. that Arateus made a similar claim, and it was definitely adopted by the medical profession.

With an entire absence of knowledge of the cause of epidemic diseases it was inevitable that methods of control and treatment should be chaotic. The general belief that they were the result of the manifestation of human or supernatural displeasure, led to the production of charms, the offering of prayers, the doing of penances and varied methods to placate the injured feelings of the responsible agents. Even now confidence in the efficacy of these measures is quite general, and is not confined to uncivilized peoples. The extensive use of the rabbit's paw, "lucky pieces," and innumerable charms which are carried and worn, attest the fact that many persons still cling to the old superstitions. Civilized peoples are not far removed from the days of witchcraft and magic; and the inhabitants of large areas of the earth still firmly believe in these things and indulge in their practice.

The acceptance of the belief that epidemic diseases were contagious led to the employment of measures to segregate those who were sick, and to promptly dispose of the bodies of the dead. But to the terror-stricken inhabitants of an infected region the only safety seemed to be in flight. Upon the announcement of the presence of pestilence, royalty, clergy, and laity sought escape by shutting up their homes and fleeing to distant parts. The natural result of such an exodus was that the disease was usually spread over large areas by infected individuals.

The earliest record of a serious epidemic is the Plague of Athens, to which reference has already been made. The most notable pestilence in history was the Black Death or Great Mortality which occurred in the middle of the fourteenth century. The deaths from this pestilence were placed at fifty million, but were undoubtedly vastly in excess of this number and it is believed that the disease was typhus, but it may have been oriental plague.

Most of the epidemics in recorded history have probably been due to typhus, cholera, and plague; but other contagious diseases have occupied a prominent place in the stories of pest-borne diseases. The discovery of the causative factors in the development and spread of many of the contagious and infectious diseases, and the application of effective prophylactic and therapeutic measures to control their spread and limit their course, have resulted in a remarkable reduction in the morbidity and mortality statistics from these diseases throughout the world. The annual death rate from contagious diseases is still large, but there is every reason to believe that further investigation and experimentation will develop measures which will eventually practically eradicate this menace to mankind.

The Insect Foe

Hundreds of millions of dollars are expended each year in the prevention and cure of disease. We are constantly waging a relentless warfare against disease producing bacteria. But, mankind has another foe, insect life, which attacks crops, forests, garden vegetables, clothing—in fact, most of the things that make up the material world. Furthermore insects directly affect human life. Few of us, except the entomologist, realize the magnitude of the battle against this subtle, ever working foe.

Today, medical entomology is demonstrating its value to public health. In connection with the problem of public health there are mainly two nuisances which must not only be dealt with from the esthetic standpoint, but from the sanitary. The first, the disposal of organic material that spread and breed disease. This task falls to the sanitary engineer. The second brings us to the group of epidemic diseases that you gentlemen as a profession are interested in, i. e., the insect-borne diseases. Every case of epidemic disease is caused by the transfer of infection from one person to another either by direct or indirect contacts. The insect and insect carrier is a vital point in breaking the chain of infection in certain epidemic diseases. The grand jury of scientists has made the following indictments, and preferred the following charge or charges. The G-men of Public Health have marked these foes as dangerous criminals. Any man, animal, or insect that aids their work by being a carrier or harbors a private zoological garden—may not offer mercy as a plea for leniency—death is the penalty.

Time limitations forbid the recital of the brilliant results obtained in the conquest of these enemies.

Here they stand guilty in the court of human relations.

(1) The fly family. House fly—typhoid fever. Deer fly—tularemia. Horse fly—anthrax. Biting or tsetse fly—African sleeping sickness.

(2) The mosquito clan—Malaria and yellow fever.

(3) The flea tribe—Bubonic plague and typhus fever.

(4) Mr. Tick—Rocky Mountain spotted fever.

(5) The Louse—Mechanized dandruff so classified by Purdue R. O. T. C. after summer camp at Fort Knox—Typhus fever and trench fever.

(6) Finally the Rodent caste: Ground squirrel—plague; Marmot—plague, and the rat has a great list of charges:

(a) Infectious jaundice (Weil's disease).
(b) Rat bite fever.
(c) Typhus fever.
(d) Pork worm disease (harbors the parasite).
(e) Bubonic plague (carrier of fleas).
(f) Rat bites result in many types of infection.

(7) To date, the culprit bed bug species has escaped indictment, although they have been suspected as disease carriers but the actual verdict has never been proven.

Professional Regulation in the Public Interest.

This is the day of the expert. The scientist, the technician, the specialist, commands the contemporary scene. The public is no longer tolerant to the jack-of-all trades when faced by extreme emergencies. A personal emergency of health or safety, calls for a type of knowledge the average layman is not able to judge competently for himself. These fields have always been beset by quacks, and miracle workers, and even intelligent people when faced by extreme emergencies show an almost uncontrollable tendency to throw sober science

(Continued on page 18)

to the winds and grasp at fabulous nostrums. These chiselers or termites as they are called on Broadway are about as popular in the public interest, as hail is to the farmer in July or August. The expert, because of his popularity, suffers by manifold counterfeits. Hence, there seems substance for the saying that an expert is a little spurt a long way from home—alongside all the scientific knowledge so proudly possessed by the experts of the world, lie vast stretches of impenetrable ignorance, rearing dangerous hulks on our common life like icebergs in the sea. Let any one set out to serve his day and generation with the skill of an expert and immediately he is confronted by the deadly weight of ignorance mocking his purpose and frustrating his labors.

For the protection of public welfare in matters of any professional service involves many major considerations but these two are certain—keeping the incompetent or unscrupulous men out, and getting a sufficient quota of men of high character and ability in. By origin and tradition, professions are self-regulating bodies. In general, each profession has built up its own status, determined its own conditions of admission, established its own code of ethics, and fixed its own system of compensation for services. The public has been tolerant toward professional autonomy until its own interests have become endangered. When public regulation has been imposed, the intent has been not to take the control of a profession out of the hands of its members but merely to establish such rules of control as are deemed necessary to public interest. The least the public can do for the distressed individual is to guarantee that whatever professional servant he may engage has at least certain minimum standards of training, experience and character, and to impose on the expert that degree of accountability for his conduct and performance which public safety demands. Therefore I urge you to be skilled in the safeguards of your privileged position and to develop the courage to prevent your profession from becoming expert custodians of "In Statu Quo." A colored parson had just delivered an impassioned sermon on the text "In Statu Quo." At the end of the sermon, his deacon approached him and said, "Parson, dat was one magnificent sermon, but I doam' exactly understand what is "Statu Quo." Soberly scratching his saintly pate, the old parson replied, "Statu Quo means dat we's in a hell of a fix."

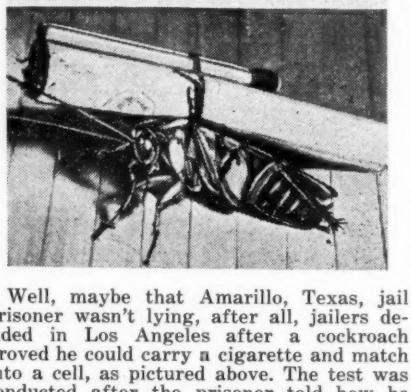
The problem of the carrier-borne diseases commanded more attention in recent years than all other means of transmission combined. The lot of preventing infectious diseases before their inception will fall to the bacteriologist, the sanitarian and medical entomologist.

The slogan which rallied America and her allies to "carry on" in the World war was, "To make the world safe for democracy." The impelling motive which inspires your profession to work in the struggle against disease is, "To make the world safe for humanity."

Smoke screens and camouflage are analogous. Half truths about people become good smoke screens. Did you ever hear a person read a sentence from a letter and forget about the entire contents? Anything taken out of sequence may seem entirely different than was intended. Watch the stories you hear about competitors. Get your information first hand and talk with the competitor about the story you heard about him.

Prisoners Train Cockroach to Bring Them Smokes in Cell

PROVING THAT COCKROACH CAN BE JAIL SMUGGLER



Well, maybe that Amarillo, Texas, jail prisoner wasn't lying, after all, jailers decided in Los Angeles after a cockroach proved he could carry a cigarette and match into a cell, as pictured above. The test was conducted after the prisoner told how he had trained a cockroach to come to his solitary confinement cell when he whistled, stopping only long enough for other prisoners to tie a "smoke" on his back. Above, Mr. Cockroach is proving his ability as a smuggler to Jailer W. J. Seaman. Below is a close-up of the cargo-laden insect.

Amarillo, Texas — County Jailer Dick Vaughn, upset because the appearance of cigarettes in a solitary confinement cell led him to believe a prisoner had a key, solved the mystery, and can't believe the solution himself.

A jail regulation denies the prisoners in solitary confinement the privilege of smoking. The cell cannot be reached without a key and its only opening is a crack under the door.

For several days Jailer Vaughn found two prisoners in the cell smoking cigarettes. He searched them and the cell. Later he caught them smoking again. The incident was repeated so many times he concluded that a prisoner had a key.

One day he heard the prisoners in the cell calling his name. As he slipped along the barred corridor he saw something moving on the floor. It was a large cockroach. Tied securely to its back was a cigarette. The roach was headed for the crack under the solitary cell door.

Later, Vaughn tested the roach, placing it in another room with a cigarette on its back. The roach responded to the call and delivered the cigarette. Several officers saw it.

The incident won freedom from the cell for the two prisoners. Said Jailer Vaughn:

"Anyone who can make a cockroach work shouldn't be in solitary confinement."—The Dallas Morning News.

Mrs. Fred Bellew, of Tennessee, set an ordinary mousetrap in her kitchen to catch mice. Its first captive was a copperhead snake.

Termites Topple Poles and Halt Presses

Clarksburg, W. Va.—Termites stopped the presses.

As the noon whistles blew Thursday, down toppled five electric power line poles in a busy street.

Power company employees said bases of the poles had been attacked by termites.

A newspaper and business houses were without electric service for an hour.

Beavers are clean housekeepers but muskrats have dirty homes.

"He that boasts of his own arguments proclaims his own ignorance."

Exterminating Business For Sale in Middle West

●

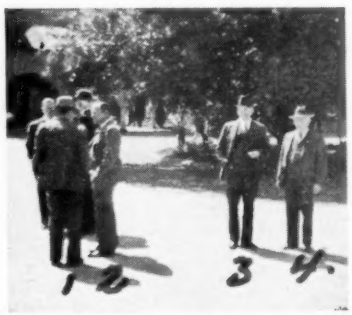
Has for ten years netted its owner at least $13,000.00. Price for each contract averages about 3½ times labor and material expenses. Valuable copyrights, unusual formulae included. Last year's gross receipts in excess of $50,000.00. Total price for good will, contracts, copyrights, formulae, office equipment, etc., $20,000.00. Insecticidal supplies at cost or market value. Write Middle West Business, c/o The Exterminators Log.

Happenings at the Pacific P. C. O.'s Conference

Through the well arranged facilities at Stanford University by our hosts, Dr. R. W. Doane and Dr. C. V. Taylor, all who attended the conference enjoyed the "School" very much. We surely do appreciate the favors and are looking forward with interest to 1939.

At the conference we learned that all good things are not products of California. We refer to Professor and Mrs. J. J. Davis, whom we enjoyed and learned to love. We like to think of them as "Adopted" Californians.

The general chairman, Jess Miller, is broadcasting that he had the most loyal and cooperative committee ever assembled, and may Mr. George Rader, chairman for next year's conference, have the same support.



(1) Prof. J. J. Davis, (2) G. R. Lovejoy, (3) Dr. C. V. Taylor, (4) Dr. R. W. Doane, Stanford University Campus, Palo Alto, Calif.

When Wilbur Smith waxed sentimental in presenting the beautiful picture of the Stanford Campus in appreciation to Jess and Irene Miller, we were all conscious of having hearts, and most of them were in our throats. Such moments make us realize how near and dear our competitors can be to us, and what wonderful friendships are formed through business associations.

Yes, Bill (Buettner), we missed your dynamic personality and hope you will be with us next year.

Hear Ye! Hear Ye! The P. C. O.'s announce the discovery of a very outstanding toastmaster by the name of Mr. V. H. Montgomery, better known as "Monty."

Prof. J. P. Davis caught on a stroll through the beautiful Stanford University Campus.

Along with the splendid lecture given by Mr. Frank Beckmann of Beckmann, Hollister & Co., on "Four Principals of a Successful Business," came the enjoyable vocal selections of Miss Yvonne Hazlett, accompanied by Bob Fober and Dick Kraemer. Jack Baker, another Stanford student, whistled his way to fame. And let us not forget the now famous Barber Shop Quartette, composed of "Ollie" Tanner, "Bob" Loibl, "Dicky" Dickens and "Happy" Davies.

The conference boasted two coeds, Mrs. Lucile Mills and Mrs. Irene Miller.

The First Pacific Coast P. C. O.'s Conference is now past history, and what valuable history for our industry. We appreciate more than ever the need for education within our industry and have now discovered a way to acquire it.

Lethane 384

The Synthetic Insecticide Concentrate

FAST ACTION
HIGH KILL
FEWER APPLICATIONS
SAFETY

THESE are the properties of insecticides based on Lethane 384. Pest Control operators are finding that this concentrate makes easy their difficult control problems. Use Lethane 384 in your control work on bedbugs, moths, roaches and other difficultly controlled insects. Exterminating sprays based on Lethane 384 increase the value of your service to your customers.

RÖHM & HAAS COMPANY, INC.

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California Legislation

By GLEN V. SLATER

EDITOR'S NOTE: *Illness prevented the personal attendance of Glen V. Slater, Registrar and Secretary of the Structural Pest Control Board of California, but his paper was read to those attending the Pacific Coast Pest Control Operators' Conference, Leland Stanford University, Palo Alto, Calif., March, 1938.*

The subject assigned to me, "Future recommendations and changes in the present Structural Pest Control Law," has already been well and adequately covered by Mr. Wilbur F. Smith, President of the California Structural Pest Control Board. A few personal remarks and observations, however, certainly will do no harm and may ultimately result in benefit to the industry.

In my opinion the industry must clarify the ambiguities in the now existing Structural Pest Control Law. Clarification should start with the Title. Every statute is limited and restricted in its operation to the precise subject matter in the title. The act in general must be amended so that those who are to be regulated by its provisions will be under no delusions as to how they will be privileged to operate.

Members of this industry as a whole seemingly want to be so regulated that all will have to start with common grounds—one of them could be minimum standards. Possibly minimum standards can be defined and written into the Act. If the industry lives up to such regulation, both the people and responsible operators benefit.

Laws are passed for the benefit of the people by the people. Naturally honest and responsible members of the pest control industry will benefit if the laws regulating their industry are fairly and equally enforced.

State legislation for regulation of this particular group of the Pest Control industry is new. As far as I can determine, California is the first state to attempt such a program.

Regulatory legislation initiated in behalf of the people to correct abuses by an industry, should be considered apart from regulatory legislation proposed by the industry to be regulated. Too often the people are not organized to protect themselves and are not prepared to make a searching investigation of new laws, so ill-advised legislation often results.

Regulatory legislation induced by the industry to be regulated is generally inspired by the idea that a governmental bureau can overcome more effectively the difficulties confronting the industry, than can the management itself. It attempts to substitute bureaucratic power for managerial initiative.

The State Department of Agriculture, through some of its divisions, regulates that group which exterminates and/or controls pests incidental to the agricultural industry. Section 100 of the Agricultural Code provides the regulation and by its provisions defines "agricultural pests." The agricultural pest control operator does not come under the jurisdiction of the Structural Pest Control Law, being specifically exempted in Section 1 of said Law.

The Entomological Service, Bureau of Field Crops, Rodent and Predatory Animal Control, and the Economics Poison Division, in one way or another regulate to some extent certain groups of the industry.

The California State Board of Health and the Boards of Health of many political subdivisions also regulate a group of the industry. Principally those who use deadly and/or poisonous gases and fumigants and certain types of rodent control or extermination operations.

The State Board of Pharmacy also regulates the sale and use of certain poisons used by the industry in pest control work.

The Contractors' State License Board regulates contractors who do *structural* pest control work in excess of $100.00.

Experience has proven that governmental bureaus have a natural tendency to attempt to increase and broaden their powers. In line with that experience, it is my belief that the majority of the above mentioned bureaus will attempt to *spread* their regulatory powers, rather than voluntarily curtail them. They will surely endeavor to retain the prerogatives they now enjoy.

In proposing new legislation for the industry, all of the aforementioned Bureaus

J-O PASTE

To the vermin exterminator who is desirous of extending an outstanding service to his client J-O PHOSPHOROUS PASTE *is* the solution

For the control of rats and roaches this product is widely and successfully used by Pest Control Operators throughout the country.

J-O ROACH TRAP

For use with J-O Paste

Convenient & Safe

TRIAL OFFER

Send $1.00 and we will ship to you postpaid a two-pound can of J-O Paste, with twenty-four J-O Roach traps, as illustrated.

Prices on 25 and 45 Lb. Pails on request

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PARA-DICHLOROBENZENE *. . . for MOTHS*

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● **Available for quick spot shipments from over 100 stock points!**

In the rush season, delays hamper operations and cost you money! Solvay distribution service on Para-dichlorobenzene and Ortho-dichlorobenzene is available from over 100 stock points and branch offices . . . making sure that your orders are promptly filled and sent to you *without delay*. Write or telephone to the nearest branch office listed below or to

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will have to be taken into consideration. I have not mentioned any of the Federal regulatory groups.

When the Bureau involved and the industry regulated agree upon additional powers to be exercised by the Bureau, consideration must be given to the *public* need or demand for such added power. If this is not done, legislation will not be passed by the legislators who are—in effect—the people.

Laws are the property of the people—not of the industry. Laws are to regulate the business practices of the industry and to protect the people. If individual members of an industry refuse to abide by the Law, they should be expelled from the industry, and the law must contain such a provision so that it may be done legally. Laws inimical to the industry should be repealed.

The Director of the Department of Professional and Vocational Standards, Mr. William G. Bonelli, advised and instructed me to the effect that it was not Departmental Policy for an *employee* of a Board, Bureau or Commission to attempt in any way to *promote* or *sponsor* new legislation.

If legislation is needed to correct administration weakness in existing acts regulating operations of divisions within the Department, such legislation will be initiated and sponsored by the head of the Department.

If the law clearly shows an intent of the Legislature to accomplish some specific purpose, but a technical error in wording tied our hands, we would be justified in sponsoring amendments to remove the barrier.

Legislation affecting the industry must be initiated and sponsored by the industry itself, which will no doubt be closely in touch with all groups of the industry and with other groups and organizations whose business is allied to or closely affiliated with the pest control business.

It is to be assumed that legislation sponsored for the good of the industry will not overlook the fact that economic conditions are constantly changing, and said new regulatory legislation must be primarily for the benefit and protection of the people. It is essential that public interest be the basis for administrative law. Laws passed for the selfish benefit of a limited group are usually subject to attack as to constitutionality.

It is my belief that the industry and interested economic groups, including this Department, desire to avoid legal entanglements and conflicts. We all want our laws to be sound, clear and enforceable.

I am sure that the sponsors of this first Pacific Coast Pest Control Operators Conference may well be proud of the results. Those of you who have the opportunity of attending the conference and the privilege of listening to and meeting with the many distinguished guest speakers selected to address you, will not only benefit personally, but surely will pass on to those members of the industry who could not attend, the many lessons they have undoubtedly learned. I hope the next conference will be even bigger and better.

I appreciate the privilege of being present and for the honor of being invited to participate in this conference, the first of its kind in California.

If this Division of State Government can be of service to you, within the scope of the Act, please call upon us.

Gentlemen, I thank you.

National Association Notices

Members are urged to call on each other, especially when traveling about the country. A permanent office is not required, but for those firms visiting New York City, it is urged that the secretary be called at either South 8-4116 or South 8-4120 and appointment will be arranged.

Membership: Many firms continue to make inquiry about joining the Association. The secretary will forward application for membership form to those who make request. Any firm desirous of giving cooperation in terms of making for a better industry and can meet the requirements of Association membership will be welcome. The dues are $10.00 per year with no pro rata amount for a portion of the year. The fiscal year runs from January 1st to December 31st.

National Seal: It is gratifying to notice the general use of the seal on letterheads, advertising and classified telephone directory advertising. If you have not ordered your cut, do so immediately. Cuts are provided in two sizes, ½x¾" and ¾"x1". The charge is $1.00 per cut or if two or more are ordered at the same time, $1.00 for the first cut and 50c additional for the extra cuts. No orders filled without check or money order accompanying.

Owls and many hawks are better mousers than cats.

McCORMICK'S

PYRETHRUM POWDER

DERRIS POWDER - CUBE POWDER

Finest ground powders of their kind in the world. Contain more killing particles per ounce. More effective and economical because they come into more intimate contact with vital parts of the insect's body.

Standardized analytically and biologically in the McCormick Laboratories—most complete laboratories in the insecticide industry. Our recommendations for the use of these powders are based upon actual field performances.

For Further Information, Write

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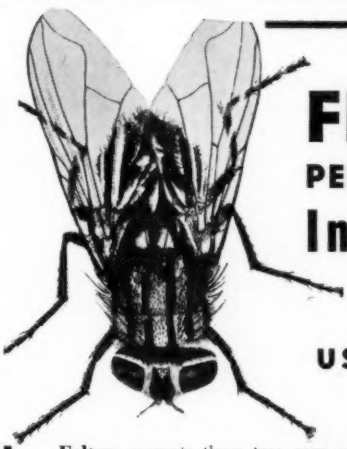

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PERFUMES FOR

Insecticide Sprays

USING Lethane 384

Felton presents these two new perfumes especially suited for use with Lethane or mixtures of Lethane and Pyrethrum.

Tested and approved by Röhm & Hass, manufacturers of Lethane.

KEREX No. 11—A light floral type. **KEREX** V-450—A clean, fresh, "outdoor" scent. **COSTS LESS THAN 2c TO PERFUME A GALLON OF SPRAY.**

Write for Sample and Proportions to Use

FELTON Quality

FELTON CHEMICAL COMPANY, INC.

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Manufacturers of Aromatic Chemicals, Natural Derivatives, Fruit Ethers, Terpeneless Essential Oils, Vanilla Concentrates. Natural and Imitation Flavor Bases.

STOCKS CARRIED IN PRINCIPAL CITIES

Local Organization News

New England Pest Control Association

The regular meeting of the New England Pest Control Association was held at Hotel Lenox, Boston, Mass., on March 29th with President Bartlett W. Eldredge presiding. The guest speaker of the evening was Professor Charles H. Blake of Massachussetts Institute of Technology who illustrated his talk with lantern slides. His subject was "Wood-Eating Insects." In connection with termites the matter of soil formation came in for considerable discussion. A question and answer period followed the address. The discourse on carpenter ants also was unusually interesting.

The Committee on Classified Telephone Directory advertising presented a mimeographed report showing the nonsensical situation of some 121 names under six different headings and for the most part there were duplications throughout. The Association is endeavoring to have one major listing in the directory with cross reference listings.

Among those who attended were: Lester West, Rose Exterminator Co.; Dr. Harry W. Houghton and Charles W. Houghton of the Safety Fumigant Co.; Harry Lang, N. Cory and B. W. Eldredge of the Waltham Chemical Co.; Louis and Mark Weintraub and Joseph Fleisher of the Astor Exterminating Co.; Leonard Goldman of the New England Exterminating and Fumigating Co. of Providence, R. I.; George R. Elliott, Roland and Kenneth Cook of the Ransford Insecticide Co. of Worchester, Mass.; A. Forsythe of the New England Bug Exterminating Co.; Peter DeSilva of the Bay State Pest Control Co. of Lawrence, Mass.; W. W. Steere of the Mattapan Insecticide Co.; A. McNulty of the AAA Exterminator Co.

Connecticut

Several pest control operators met with State Entomologist Neely Turner, at the Experiment Station, New Haven, Conn., on Friday, April 22nd.

Termite Control was the important topic of discussion.

Associated Exterminators and Fumigators of New York

The regular monthly meeting of the Associated Exterminators and Fumigators of New York was held at 7 East 44th Street, Tuesday, April 26th. President William O. Buettner presided. W. J. Parker, Executive Secretary, and Mr. Stonebraker, Assistant Secretary, presented a detailed report which covered a complete visitation made to the offices of all the members.

Favorable action was taken to join the Credit Bureau so that members might be in position to obtain credit information about prospective clients as well as to arrange for a method of collections on delinquent accounts.

General items of business ethics and labor relations received considerable attention. Section 104 of the Sanitary Code of the Department of Health is being studied with the purpose in mind to seek definite revisions and other amendments that will make for a more equitable law to govern the industry working for the general good of the public and the responsible firms of the industry.

Philadelphia, Pa.

Martin Meyer heads an active committee on "Classified Telephone Directory" Advertising and Listings which met with the officials of the telephone company on Tuesday, April 26th.

Cincinnati Pest Control Association

While only comprising four firms, the Cincinnati Pest Control Association enjoys periodic luncheons and invited guests taking part in the discussions. R. M. Allen reports progress with regard to several matters, including that of classified telephone directory advertising.

California Pest Control Association, Inc.

Division No. 2, Los Angeles

On April 13, 1938, Division No. 2 held its monthly meeting at Haskell's Cafe. Many that had attended the recent Pacific Coast Pest Control Conference at Stanford University, Palo Alto, California, were present and gave freely of their acquired knowledge to those that were not so fortunate in being able to attend the confer-

Specialists in

Highest Quality Tested Pyrethrum and Rotenone Products

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New York, N. Y.

M·S·A GAS MASKS

FOR SURE PROTECTION WHEN FUMIGATING

You can rely upon the safety afforded by M.S.A. Masks—whether you employ the U. S. Bureau of Mines-approved Hydrocyanic Acid Gas Mask or a unit equipped with GMC Canister for Chlorpicrin protection. Both masks provide unusual wearing comfort, full freedom of action, and the famous Kops-type facepiece that fits any face perfectly, adjusts easily and permits normal hearing, sight, speech and working freedom. • Write for a free demonstration, or for information on a suitable M.S.A. Mask for any other gaseous hazards.

MINE SAFETY APPLIANCES CO.

Braddock, Thomas and Meade Sts., Pittsburgh, Pa.

District Representatives in Principal Cities

For DUST hazards: M. S. A. COMFO RESPIRATORS

ence. Many constructive suggestions were made in regard to the 1939 Conference. Announcement was made that Mr. C. D. Bender, State Department of Chemistry, would be the speaker for the May monthly meeting of this division.

Michigan Association of Exterminators and Fumigators

"The annual meeting of the Michigan Fumigators and Exterminators Association, Inc., was held April 5, 1938, at 3020 Grand River Avenue, the following members being present: Nils Akervall, representing the Twin City Fumigating Company; J. N. Seidman, representing the Dependable Fumigating Company; M. R. Van Auken, representing the J. J. Carroll Fumigating Company; Alfred Goulet, representing the East Side Fumigating Company; William Smith, representing the Master Fumigating Company; Kenneth Goulet, representing the Cyanide Gas Company; Edward P. Lynch, representing the City Health Fumigating Company; Ray Bechtell, representing the Aristo Exterminating Company; Melvin Goulet, representing the Sanitary Fumigating Company; D. M. Carey, representing the Hi-Power Fumigating Company; Arthur Goulet of the Reliable Fumigating Company, not present. This being the annual meeting, election of officers was called for. After a ballot was taken, the following officers were elected for the ensuing year: Jacob N. Seidman, of the Dependable Fumigating Company, President; William Smith, of the Master Fumigating Company, Vice President; M. R. Van Auken, of the J. J. Carroll Fumigating Company, was re-elected Secretary and Treasurer. This marks the beginning of the fifth successive year that the Association has been functioning in the city of Detroit. At the present time, there are twelve members of the industry belonging to the Association and the election of these capable men to the offices that they have been selected for, indicates that the Association intends to continue its work for the purpose for which the Association was created, which is to better Fumigating and Exterminating conditions in general, in Wayne County. The Association is contolled by a board of seven directors and has committees functioning for the purpose of increasing membership and recreational entertainments for the members. Meetings are held monthly to discuss the problems that are brought up before the industry and any problem or question that the members may consider worthy of discussion."

What's New In Pest Control—Personals

More and more is there being injected into advertising the idea of "Pest Control." This is as it should be. When this idea is coupled with the follow-through in terms of a major listing of "Pest Control" in the classified telephone directories, the public will soon recognize an industry that does not want to confuse the public. W. B. McCloud & Company of Chicago, Ill., are to be congratulated on their recent folder entitled "Here Come the P.C.O.'s." Luther M. Church of the Getem Manufacturing Co. of Norfolk, Va., has had interesting postal cards prepared carrying such sentences as: "At your service for Pest Control," and "Pesticians Practicing Pestology."

The Monsanto Chemical Co., of St. Louis, Mo., has for the first time issued an annual report to its employees. Covering the year of 1937, this 36th annual report takes the form of a conversation that Edgar Monsanto Queeny has with his employees by means of the attractive booklet telling of the structure of the company, indicating the important function and relationship between and among stockholders, employees and the customers. Written in a very interesting manner, this booklet should be read by all those who like to talk things over with their employees.

Popular Science Monthly in its February issue carries an interesting article that bears the caption "Man vs. Rat," by E. W. Murtfeldt. Just a story how expert exterminators hunt down a brazen thief, vandal and killer.

The Dallas Morning News of February 28th showed the picture of a wedding party thrown in a heap when the floor of the home collapsed. Could it be termites? It is said that when order for new lumber was placed that there was a remark that termites had something to do with this. The newspaper article does not state the reason for the collapse of the floor. Yes, the wedding continued, but on the lawn.

Mrs. Harriet Mast of the Master Exterminating Co. of Akron, Ohio, was a re-

(Continued on page 24)

Do a good, clean job with

ANT-X

"Their Last Meal"

For Indoor Service

Ant-X DEATH BOX

The Thallium treated double bait attracts and destroys both the sweet and grease eating type Ants. Locked cover assures utmost safety in the home. Cannot be opened by a child or spilled by a dog, cat or other domestic animal. Inexpensive and simple to use. One size only. Send for sample box, 25c postpaid.

For Outdoor Service

Ant-X DEATH TUBE

Sweet type "Jelly Bait," Thallium treated in handy collapsible tubes for use especially on golf courses, lawns, greenhouses, etc. A DROP ON THE SURFACE KILLS ANTS IN THE NEST. Also brings certain death to rats, mice, roaches, flies, etc. In 1 and 5-ounce tubes. Send for sample, 25c postpaid. Also 5-lb. pails.

Other **NOTT** Successes

RAT-NOTS	Prepared non-poisonous bait.
MOUSE-NOTS	Prepared Strychnine treated bait.
MOLE-NOTS	Prepared Strychnine treated bait.
ROACH-NOTS	Prepared Fluoride treated bait.
DOGSKOOT	Dog repellent.

For retail sales, these nationally advertised "Nott Products" are available in sizes suitable for over the counter sales, attractively packaged in striking multi-colored counter display cartons.

Consult us when next in the market for Canary Seed, Hemp Seed, Red Wheat—Strychnine or Thallium treated.

QUOTATIONS ON REQUEST

NOTT MANUFACTURING CO.

General Offices, 275 Water St., New York City

Chicago, Illinois Portchester, N. Y.

LIVING CLOTHES MOTHS

3x3 Flat Displays of Living Insects

Webbing clothes moth	$1.50 each
Casebearing clothes moth (supply limited; sensitive to heat)	1.75 each
Black carpet beetle (hardy and long-lived)	1.75 each
Two species together	2.00 each
Three species together (apt to kill each other in time)	2.25 each

Special Displays, treated vs. untreated cloth, 25 cents extra. I supply suitable cloth; you treat and return. Terms: Cash with order.

VENTILATED CAPSULES, each containing 5 webbing clothes moth larvae. (Used to test effectiveness of fumigations), 5 for $2.50.

Single shipments worth $ 5.00	5% off
Single shipments worth $10.00	10% off
Single shipments worth $25.00	15% off

All prices F.O.B. Bon Air, Va. Shipped by Express, Cash with order or C. O. D.

WARREN MOORE

P. O. Box 75, Bon Air, Virginia

cent visitor to New York City. She reports business on the up-grade and rushed with termite work. Look out for those wooden floors.

"Terry Termite" was attractively introduced by means of the folder issued by the Rose Exterminator Co. of Cincinnati, Ohio.

The annual Flower Show in New York City included a display exhibit by the Guarantee Exterminating Co. featuring termites. S. S. Rosen, president of the company, and E. J. Jennings report much interest in the termite inquiries.

Alfred Zimmern of Dallas, Texas, has come forward with the latest change in the business set-up and is now known as the Zimmern Pest Control and located at 5007 Lindsley Ave. Mr. Zimmern will continue to operate the termite division of the Temple Lumber Co.

The latest report of the technique of reducing comes from Canton, Ohio. The Prospect Pest Control Co. keeps both Mr. and Mrs. H. E. Moffett busy. Termite work is on the increase in Canton and likewise affords an excuse for Mrs. Moffett to prepare trenches—a perfect reducer.

Lethelin Products Co., Inc., of Manhasset, L. I., have moved to larger space at Wood Ridge, N. J. The plant at 10 No. Bleeker St., Mt. Vernon, N. Y., is more adequately equipped to fill the needs of the industry in the manufacture of Magikill Jelly which is an effective ant bait. Other products include Borekill, for tree borers; Mystikil, a plant spray, and Paratox for lice and body vermin. Dr. Ernest D. Wilson, who was formerly active in the exterminating business and a former director of the National Pest Control Assotion, is in charge of the laboratory.

The Barber Laboratories, Inc., has written that in spite of the recession they have just completed the biggest business for the month of March during the past 16 years. Mr. Barber writes. "The future is looking very much better." Congratulations, Mr. Barber.

We have been notified that the Exterminating Service Corp. has moved to their new building at 9 West 29th St., New York, N. Y.

Mr. L. G. Bliss, who was associated with the Foote Mineral Company in research and sales work several years ago, has again returned to the Foote Chemical Company and will be active in sales and chemical development work. Mr. Bliss now holds the position of Sales Engineer.

Professor Charles H. Blake of Massachusetts Institute of Technology commented as follows about his recent attendance at a meeting of pest control operators. "I was glad to talk to the New England group for two reasons—first, because I think it is high time that the scientists got done laughing at the "exterminators," and secondly, because it seemed that the pest control operators might be given a somewhat better idea of the practical significance of some of the matters into which a scientist inquires, such as soils and temperature, and so on."

Although J. M. Miller was general chairman of the West Coast Pest Control Operators Conference at Palo Alto, it was figured statistically that Mrs. Miller was really 65% of the partnership. Incidentally Mr. Miller has made it clear that many deserve credit for the splendid work done which culminated in a successful convention. George A. Rader comes in for a just share of credit.

Acme Protection Equipment Co., Inc., of Pittsburgh, are quite enthusiastic about their new location at 3616 Liberty Ave., which permits for office, laboratory and factory to be under one roof.

Here's one for Ripley. The Western Pest Control Service moved to their own building at 1333 East Whittier Blvd. Formerly this firm was located at West Whittier and carried the same 1333.

City Exterminating Co., of Chicago, Ill., moved on April 1st to new and larger quarters at 351 North La Salle St.

An unusually interesting booklet entitled "Mosquitoes, Their Life History and Control," is available for those who would like to have this. The price is ten cents and can be procured from the Nassau County Extermination Commission, 75 Lee Avenue,

FLUORIDE
• INSECTICIDES

PYRETHRUM
Certified

RED SQUILL EXTRACT
Standardized

THALLIUM SULPHATE
Rat Killer

ARSENICAL
ANT SYRUP
Effective for All Varieties of Ants

Literature - Price List - Information on Request.

American Fluoride Corporation
151 WEST 19th STREET
NEW YORK

"If it's

FUN for YOU
. . . it's O.K. with ME!

. . . says the Game to the Hunter using BLANKS

Your fumigation may get the *surface* pests, but unless it reaches refugees deep in upholstery and other remote spots —the bugs won't mind a bit. Even though you get those snug in deep retreats, there are still the eggs.

With LARVACIDE you will get *both*. No moth or other bugs will live to laugh it off, no eggs will hatch, for LARVACIDE *sterilizes the eggs.*

There will be no heavy equipment to haul around—no worry about intruders.

The powerful tear gas fumes of LARVACIDE drive out those who have no business there before harm can be done.

RODENTS DIE In the Open—
No Carcass Nuisance

Fumigation for insects takes care of rodents, too. Or if rodents are the main job, light concentrations will do the work. Trace of LARVACIDE lingering in burrows insure against rodents returning for a long, long time. ● Write for literature on Effective and Safer Extermination, and special booklet on Rodent Control.

Larvacide
ETHYLENE DICHLORIDE
The SAFER Fumigant

INNIS, SPEIDEN & COMPANY
117 Liberty St., N. Y.

BOSTON ● PHILADELPHIA ● CHICAGO ● CLEVELAND ● KANSAS CITY

Rockville Center, N. Y. This Commission has been engaged in mosquito control work for the past twenty-two years.

Congratulations to Harry Tanner of Jewett, Inc., of Los Angeles, Calif., who was recently appointed by Governor Merriam of California to serve on the California Structural Pest Control Board. Mr. Tanner takes the place formerly held by Milton G. Jorgenson. Wilbur F. Smith of Pasadena, Calif., is chairman of this Board which governs the pest control industry of California. Captain D. C. Castle of San Francisco is the other member of the pest control industry serving on this Board.

The Tornado Manufacturing Co. of Columbus, Ohio, of which H. K. Steckel is president, recently announced that Myron W. Smith, graduate entomologist, has been engaged for research and sales activities. The Tornado Manufacturing Co. has recently completed its 38th year of business in the pest control field in Columbus, having been established the early part of 1900.

To bring out the need of members of the staff of an advertising agency to cooperate with one another, the following was quoted: "Yeah? Well what about me? What about me? Didn't I send you over to that exterminating service? They wanted a lousy copywriter. . . ." He grinned and ducked.

SIDNEY M. CRANE

His many friends in the industry will regret to learn of the death of Sidney M. Crane of San Francisco, Calif. Funeral services were held February 10th.

Write for These Booklets

The latest helpful informative service literature will be sent to you without cost or obligation.

Please note, however, that you must request each booklet on a separate letterhead, though they may all be mailed in the one envelope to 514 East 14th St., Kansas City, Mo.

PYROCIDE 20 DEODORIZED CLARIFIED

Is the subject of an informative and instructive pamphlet. Illustrated. Lists some pertinent facts about Pyrethrum; chemical evaluation of pyrethrum; biological evaluation of Pyrethrum; commercial grades of Pyrethrum; effect of storage, light, and heat on Pyrethrum products. Formulae for household insecticides, livestock sprays, mosquito larvicides; horticultural sprays.

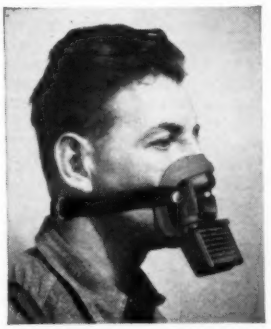
FREE COPY OF PAMPHLET MAILED FREE TO INTERESTED PEST CONTROL OPERATORS and INSECTICIDE MANUFACTURERS. Write McLaughlin, c/o The Log.

SOLVAY PRODUCTS

48-page booklet in colors and illustrated, covering their entire line of Alkalies and Special Products, with a special section dealing with Para-Dichlorobenzene and Ortho-Dichlorobenzene.

FREE COPY MAY BE HAD BY PEST CONTROL OPERATORS. WRITE SOLVAY, % The Log.

DUSTFOE RESPIRATOR



Descriptive matter covering new respirator shown above approved by the U. S. Bureau of Mines. Full protection under the most severe dust conditions is claimed by the manufacturer. Filter replacement refills a matter of seconds. Illustrated.

COMPLETE INFORMATION FOR PEST CONTROL OPERATORS. WRITE MINE, c/o The Log.

(Continued on page 26)

EXTERMINATORS CHEMICALS

DeHaen's Imported
or Domestic
SODIUM FLUORIDE 95/97%
White or Tinted

RUMETAN ZINC PHOSPHIDE
For Rats, Mice and Mole Crickets

THALLIUM SULPHATE
For Rodent and Ant Extermination

DEODO
Special Odor for Kerosene Spray

NO-DOR
A Chemical Odor Killer

FORMULA HINTS SENT ON REQUEST

Pfaltz & Bauer, Inc.
EMPIRE STATE BLDG., NEW YORK

These New Booklets Describe
Penick's Laboratory Tested

ROTENONE - SQUILL - PYRETHRUM

Available upon Request

S. B. PENICK & COMPANY
132 NASSAU STREET
NEW YORK, N. Y.

THE A B C OF THIS TERMITE BUSINESS

Is the title of this worth-while booklet covering such subjects as what are termites, what do termites eat, where do termites live, how do termites form new colonies, when termites swarm, how many colonis are established; does the parent colony die when the swarmers leave, do termites work in all kinds of wood, how do termites damage a building, how can termites be detected, how can termite damage be told from "dry rot," how do termites enter a building, why is termite damage increasing, does spraying timbers in a building with creosote stop termite attack, can timber be treated after the building has been completed, is a partial or localized treatment effective, are termites dangerous to humans; map showing wherein termites are found, etc. Illustrated.

FREE COPY TO INTERESTED TERMITE CONTROL OPERATORS. WRITE EXTERMITAL, c/o The Log.

MOTH PROOFING

Interesting leaflet describing 100% moth proofing which is odorless, colorless, non-poisonous. Gives chemical constituents and process for applying.

FREE COPY TO MOTH PROOFERS. WRITE KATATEX, c/o The Log.

HOUCHIN CATALOG

Contains data on Blower for powders and liquids; also information concerning Insect Powder Bellows. Should be of interest to all pest control operators.

WRITE FOR YOUR COPY BY ADDRESSING HOUCHIN, % The Log.

SANITARY CHEMICALS

50-page catalog of interest to recognized dealers and jobbers who are interested in the subject of private label merchandising, for such products as deodorant blocks, insecticides, such as fly sprays, bed bug and roach sprays, cattle sprays, mill and warehouse sprays, vaporizer sprays, moth sprays, roach powders, ant insecticides, rat poisons, agricultural sprays, mosquito larvacide, liquid deodorants such as chlorozif, formaldehyde sprays, pine deodorants, drip machine fluids, kilan-odor, theatre sprays, etc.

FREE COPY TO INTERESTED DEALERS AND JOBBERS. WRITE FULD, c/o The Log.

AROMATIC PRODUCTS

32-page catalogue, 8½x11, having special sections devoted to Perfume Bases for Insecticide Sprays; for perfuming and coloring Paradichlorbenzene Crystals and Blocks in one operation; for perfuming and coloring naphthalene flakes and blocks in one operation; water soluble perfume oils for theatre sprays, etc. Of special interest to every pest control operator and insecticide manufacturer.

FREE IF YOU WILL WRITE FELTON, c/o The Log.

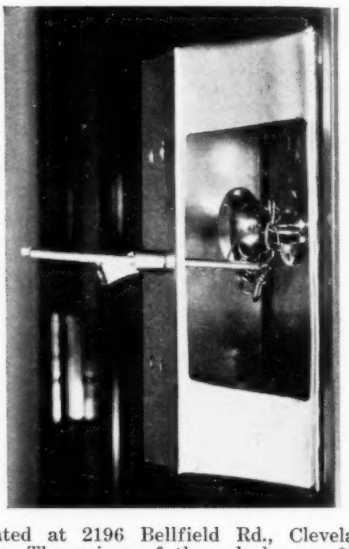
The Comstock Publishing Co. has recently announced two important publication in the field of economic entomology:

"The Biological Control of Insects" by Harvey L. Sweetman (461 pages, 142 illustrations, price $3.75).

"Insect Enemies of Shade Trees" by Glenn W. Herrick (425 pages, 340 illustrations, price $4.50). Send orders to Log.

Safety Door Lock

The March issue of the Discoid News Bulletin published by the American Cyanamid and Chemical Co., features the safety door lock of the Laing Exterminating Co.

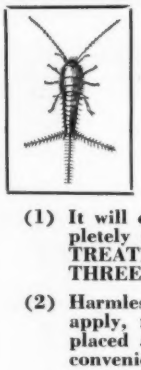


located at 2196 Bellfield Rd., Cleveland, Ohio. The prices of these locks are $3.00 for single lock; $15.00 for a half dozen; $27.50 for one dozen. The prices are f.o.b. Cleveland.

"Business sweetens pleasure and labor sweetens rest."

"POSITIVE" - "SAFE" and "SURE"

USICO SILVERFISH CONCENTRATE



"FACTS"

KNOWN WORLD WIDE!

(1) **It will exterminate all Silverfish in building completely and properly treated within 40 days; ONE TREATMENT will protect against reinfestation for THREE YEARS.**

(2) **Harmless to human beings and animals, simple to apply, no tearing up or marring woodwork, yet placed away from any chance of removal. No inconvenience to tenants whatever.**

(3) **One pound will treat completely — three 2-room apartments, two 3-room apartments, or a basement room 20x20.**

(4) **It has fulfilled every claim made for it, under the worst conditions known. Write for testimonials.**

(5) **"NEW LOW PRICES" — $1.00 per pound, f.o.b. Seattle, Washington. Minimum amount 10 pounds. Shipped express, second class.**

(6) ***Don't envy the exterminator who can guarantee the above performance, be one!!!***

U. S. INSECTICIDES CO.

412 Hoge Building Seattle, Washington

FACTS

About Per-Mo Permanent Mothproof Liquid

Per-Mo is easily applied to rugs, carpets, over-stuffed furniture, drapes, blankets, wearing apparel and other woolen articles. Chemists' tests prove that Per-Mo becomes an integral part of the fabric, the same as a dye. Its efficacy is not impaired by dry-cleaning, washing, exposure or use. Even years after the application of Per-Mo moths cannot injure any fabric so treated.

WHAT SOME USERS OF PER-MO SAY

We are proud to say that we have used quite a bit of the Per-Mo mothproof material, and so far, have found it to be very satisfactory.— Pest-Control Operator.

Since using Per-Mo in this building five years ago we have never seen any sign of moths. We cannot recommend your product too highly.— Apartment Manager.

Since having my entire house treated with Per-Mo I've had no fear of moths whatsoever, and it has been a joy and help. I can most sincerely recommend Per-Mo.—Housewife.

Per-Mo Mothproof is a colorless and odorless liquid, that is applied to any woolen fabric with a spray-gun, either electrically or hand powered. Write for full particulars.

Salesmen and Jobbers Write for Exclusive Territory.

PER-MO MOTHPROOF CO.

2306 Olive St., Dept. M Kansas City, Mo.

Additional Patents Relating to Pest Control

By DR. R. C. ROARK

EDITOR'S NOTE: *This service is provided through the Department of Agriculture for the purpose of bringing to the attention of those interested such matters that may be of assistance to the industry. The Department of Agriculture assumes no responsibility for the merits or workableness of any of the inventions mentioned. Copies of all patents can be obtained for 10c (no postage stamps) sent to the Patent Office, Washington, D. C. When placing orders be sure to note the number of the patent, the date, the name of the patentee and the subject of the invention.*

2,098,942 (Nov. 16, 1937; appl. June 17, 1936; in Germany June 18, 1935). PROTECTION OF MATERIALS SUBJECT TO PARASITIC ATTACK. Merlin M. Brubaker, Lindemere, Del.—E. I. du Pont de Nemours & Co., Wilmington, Del. The patentee claims a composition of matter suitable for protecting materials against parasitic attack comprising a dispersion of a parasiticide in an aqueous solution of an acetate of deacetylated chitin.

2,099,021 (Nov. 16, 1937; appl. Feb. 24, 1936). RODENT TRAP. George M. Landes, Webb City, Mo.

2,099,623 (Nov. 16, 1937; appl. Nov. 19, 1935). CUPRIFEROUS FUNGICIDES. Ray Riley, Long Island City, N. Y. and William McA. Bruce, Mount Holly, N. J.—The permutit Co., New York, N. Y. The patentees claims as a new fungicide composition an alumino-silicate gel preparation having base exchange properties and containing exchangeable copper, said gel also containing copper in a form not exchangeable with a sodium chlorid solution and in amount between 10 and 25 per cent, calculated as Cu, said preparation being actively fungicidal.

2,099,686 (Nov. 23, 1937; appl. July 19, 1933). ORGANIC ARSENIC COMPOUNDS. Cliss S. Hamilton, Lincoln, Nebr.—Parke, Davis & Co., Detroit, Mich. The patentee claims organic arsenic compounds in which the arsenic is attached to the aryl nucleus of an aryloxy alkanol group.

2,099,826 (Nov. 23, 1937; appl. July 22, 1937). INSECTICIDE. Paul S. Schaffer and Herbert L. J. Haller, Washington, D. C.—United States Government and people of the United States. The patentees claim an insecticide containing as its essential active ingredient a dialkyl-acridan.

2,100,032 (Nov. 23, 1937; appl. May 29, 1936). FLY SWATTER. Lynde De F. Hokerk, Utica, N. Y.—Kerk Guild, Inc., Whitesboro, N. Y.

2,100,363 (Nov. 30, 1937; appl. Aug. 3, 1934). ANIMAL TRAP. Herbert A. Stilson, Chicago, Ill.

2,100,469 (Nov. 30, 1937; appl. Mar. 17, 1934). GERMICIDE AND FUNGICIDE COMPOSITION. Cornelia Burwell, Ann Arbor, Mich. A germicidal and fungicidal, saponifiable composition, comprises synthetic fatty acids derived from an oxidized petroleum hydrocarbon and an alkali metal hydroxide, said mixture having a pH value between 4.5 and 5.5.

2,100,493 (Nov. 30, 1937; appl. June 3, 1936). INSECTICIDE. Lloyd E. Smith and Houston V. Claborn, Washington, D. C.—United States Government and people of the United States. An insecticide contains as its essential active ingredient o-, m-, or p-nitroiodobenzene.

2,100,764 (Nov. 30, 1937; appl. Nov. 30, 1936). DEODORIZER. Earl A. Kleb and Joseph C. Metzger, St. Louis, Mo. This invention relates to deodorizers, and has special reference to structures for use in removing objectionable odors from smoke, gases, vapors, etc., which are produced or emitted by or during manufacturing or processing operations in certain industries.

2,100,909 (Nov. 30, 1937; appl. Sept. 11, 1936). AUTOMATIC ROACH TRAP. Arnulfo Mora, El Paso, Texas.

2,100,925 (Nov. 30, 1937; appl. July 30, 1932). ANIMAL TRAP. Herbert A. Stilson, Chicago, Ill.—A. S. Nichols Western Co., Chicago, Ill.

2,100,926 (Nov. 30, 1937; appl. Nov. 14, 1934). ANIMAL TRAP. Herbert A. Stilson, Chicago, Ill.

(Continued on Page 28)

Monarch Powder Sprays

Used by Many Leading Exterminating Concerns Throughout the Country

Large Opening in Neck Affords Easy Filling

Screens Powder Perfectly

Made of High Grade Materials

Made in 3 Sizes

No. 40 Has 14 Ounce Capacity

No. 41 Has 9 Ounce Capacity

No. 42 Has 8 Ounce Capacity

Write for Catalog and Price List

THE VANT WOUD RUBBER CO.
JERSEY CITY, - - - - NEW JERSEY

A NON-POISONOUS RAT KILLER

15c PER POUND IN ONE-POUND TIN CANS

For Safety, Effectiveness and Economy —USE

SUR-RID RAT KILL

Try It—It Saves Time and Money

SUR-RID Rat Killer is tested in our own laboratory on both wild and tame rats and we GUARANTEE the Killing Power.

SUR-RID Rat Killer contains meat, cereals, vegetables and just the right amount of a tested killing agent. It is especially appetizing to rats and mice as there is only an odor of fresh meat and vegetables and there is no raw odor of chemicals; four distinct lures, MEAT, FISH and CEREAL and CANTALOUPE, packed either assorted or of one kind to a case, which contain three dozen one-pound cans.

Due to the increase in the sale of this Rat Killer, we are reducing the price as follows:

	Per Dozen
Three Dozen Lots, labeled	$2.00
Gross Lots, labeled	1.90
Gross Lots, no label	1.80
The half-pound size, packed five dozen to a case	1.25

All Prices F. O. B. St. Louis
Also Packed Under Private Label

SUR-RID PRODUCTS COMPANY
Manufacturers
(FORMERLY REAL EXTERMININATING PRODUCTS CO.)
455 PAUL BROWN BLDG., ST. LOUIS, MO.

2,100,966 (Nov. 30, 1937; appl. May 19, 1936). INSECT TRAP. Joseph Lambert, Pittsburg, Kans.

2,101,008 (Nov. 30, 1937; appl. June 6, 1936). MITE KILLER ATTACHMENT FOR BIRD CAGE PERCHES. Frederick Mayer, New York, N. Y.—Cornell Center Homeopathic Bird Remedy Co., Inc., New York, N. Y. This invention provides cup-like receptacles which may be attached to the perches of a cage and filled with a petroleum jelly, such as vaseline or the like, to capture and kill the mites before they can reach the bird.

2,101,482 (Dec. 7, 1937; appl. Feb. 23, 1937). ANIMAL TRAP. Julius Tschantre, New York, N. Y.

2,101,587 (Dec. 7, 1937; appl. July 22, 1935). INSECTICIDAL PRODUCT AND PROCESS. Arthur A. Levine and Robert W. McAllister, Niagara Falls, N. Y.—E. I. du Pont de Nemours & Co., Wilmington, Del. The patentees claim an insecticide comprising cyclohexene oxide. Cyclohexene oxide is normally a liquid having a boiling point at normal atmospheric pressure of about 132° C. It is especially valuable for the destruction of various objectionable insects such as the common clothes moth larvae, the granary weevil, the confused flour beetle, aphis or plant lice, cock roaches, and bedbugs.

2,101,609 (Dec. 7, 1937; appl. Dec. 2, 1935). TRAP. Lightle J. Cheek, Little Rock, Ark.—one-third to H. M. Cheek, North Little Rock Ark., and one-third to Golden Blount, Searcy, Ark. A rat trap is described.

2,101,645 (Dec. 7, 1937; appl. May 25, 1937). INSECTICIDE AND FUNGICIDE. Robert A. Fulton and Willis C. Fernelius, Columbus, Ohio.—The United States Government and people of the United States. The patentees claim a material for use in combatting economically harmful plant and animal organisms, containing sulfur nitride as its essential active ingredient. Sulfur nitride occurs as orange-red crystals melting at 178°-180° C. It is insoluble in water but soluble in a few organic solvents. In laboratory feedings tests with Mexican bean beetle larvae (**Epilachna varivestis** Muls.) sulfur nitride was one-third as toxic as pure rotenone and had twice the toxicity of calcium arsenate and thiodiphenylamine. In laboratory tests at the dilution of 1-10,000 the material retarded the growth of common air spores (such as blue and red mold, **Rhizopus nigrisans** and **Penicillium sp.**).

2,101,648 (Dec. 7, 1937; appl. Jan. 30, 1933). PROCESS AND PRODUCT RELATING TO UNSATURATED XANTHATES. Herbert P. A. Groll, Berkeley, Calif.—Shell Development Co., San Francisco, Calif. The patentee claims a monoolefinic aliphatic xanthate containing at least five carbon atoms to the molecule, and possessing the general formula $XYC^{1}HOC(=S)SM$ wherein X represents an isoalkenyl radical, M represents a metal, and Y represents a substituent of the class consisting of hydrogen and alkyl radicals, X being linked to the C^{1} carbon atom by an unsaturated tertiary carbon atom. Examples are isobutenyl xanthate, alkali-metal isobutenyl xanthate, and potassium isobutenyl xanthate. These are useful as insecticides.

2,101,649 (Dec. 7, 1937; appl. Feb. 27, 1937). XANTHATES OF UNSATURATED SECONDARY ALCOHOLS AND PROCESS FOR THEIR PREPARATION. Herbert P. A. Groll, Berkeley, Calif.—Shell Development Co., San Francisco, Calif. The patentee claims a xanthate of an unsaturated secondary alcohol. Examples are a xanthate of methyl vinyl carbinol, the potassium xanthate of methyl vinyl carbinol, a xanthate of methyl isobutenyl carbinol, and the potassium xanthate of methyl isobutenyl carbinol. These are useful as insecticides.

2,101,704 (Dec. 7, 1937; appl. May 26, 1934). INSECTICIDAL COMPOSITION. Charles Dangelmajer, Niagara Falls, N. Y.—E. I. du Pont de Nemours & Co., Wilmington, Del. An insecticidal or fungicidal composition comprises cuprous cyanide in a finely divided, highly deflocculated state consisting chiefly of loosely bound aggregates of small crystals impregnated with molasses and intimately mixed with kieselguhr.

2,101,788 (Dec. 7, 1937; appl. May 18, 1937). TRAP. Lew Benson, San Francisco, Calif.—one-half to Arthur C. Benson, Glendale, Calif.; one-sixteenth to Lesley D. Benson, Tillimook, Ore.; one-sixteenth to John Benson, Phillipsburg, Kans.; one-sixteenth to Bert O. Benson, one-sixteenth to Charles Benson, one-sixteenth to William Benson, all of Vennes, Calif.; and one-sixteenth to Kark Mudge, East St. Louis, Ill. A rat trap is described.

(Continued on Page 29)

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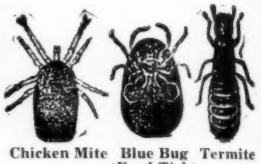

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2,101,988 (Dec. 14, 1937; appl. Jan. 25, 1936). INSECT BAIT. Harry M. Epstein, New York, N. Y. A bait for insects comprises a sheet of material, adapted to be placed over an insect-infested spot, pointed projections upon and over its entire lower surface facing the said spot, and an insecticide imbedded between the projections leaving the points of the projections exposed for the purpose of lacerating the tongues of animals attempting to lick up the insecticide.

2,102,303 (Dec. 14, 1937; appl. Oct. 31, 1935). SPRAY GUN VALVE. Svend Bramsen and Fritz Wahlin, Chicago, Ill.—Binks Mfg. Co., Chicago, Ill.

2,102,564 (Dec. 14, 1937; appl. Nov. 27, 1933). INSECTICIDES AND FUNGICIDES. Robert J. Bonstein, Scranton, Pa. An insecticide and fungicide comprises a water dispersible condensation product of an inorganic salt, selected from the group consisting of inorganic sulfides and inorganic selenides, with an olefin di-halide.

2,102,854 (Dec. 21, 1937; appl. June 22, 1934). HALOGEN DERIVATIVES OF N-AMYL CRESOLS. George W. Raiziss and Leroy W. Clemence, Philadelphia, Pa.—Abbott Laboratories, North Chicago, Ill. The patentees claim an n-amyl cresol which is dihalogenated on the ring. These possess surprisingly high germicidal values and low toxicities, the germicidal power thereof exceeding the corresponding non-halogen compounds.

2,103,195 (Dec. 21, 1937; appl. July 3, 1937). INSECTICIDE. Howard A. Jones, Washington, D. C.—The United States Government and people of the United States. An insecticide contains as its essential active ingredient a combination of rotenone and dichloroacetic acid.

2,103,196 (Dec. 21, 1937; appl. May 2, 1935). INSECTICIDAL OIL SPRAY. Hugh Knight, Claremont, Calif.—Emulsoids, Inc., San Francisco, Calif. A tree spray composition comprises about 95 per cent to 99 per cent of paraffinic mineral oil, about .1 per cent to 2.0 per cent of toxic naphthenic acid, and about .5 per cent of 4.5 per cent oil soluble emulsifier.

2,103,355 (Dec. 28, 1937; appl. April 23, 1937). INSECT EXCLUDER. Clyde C. Farmer, Pittsburgh, Pa.—The Westinghouse Air Brake Company, Wilmerding, Pa. This invention relates to means adapted to be associated with the vent passage in a brake controlling valve device which is open to the atmosphere to prevent the vent passage from being closed or partially restricted by dirt or foreign matter deposited therein by insects or otherwise.

2,103,877 (Dec. 28, 1937; appl. Feb. 6, 1936). ANIMAL TRAP. Herbert A. Stilson, Chicago, Ill.

2,104,083 (Jan. 4, 1938; appl. Feb. 23, 1937). TRAP FOR RODENTS. Steve Krahl, Weimar, Texas.

2,104,149 (Jan. 4, 1938; appl. Feb. 12, 1936). FLY SWATTER. Charles L. Bell, Clinton, Iowa—Lubbers & Bell Manufacturing Co., Clinton, Iowa.

2,104,412 (Jan. 4, 1938; appl. Dec. 29, 1931). ALKYL PHENOLS. Hyym E. Buc, Roselle, N. J.—Standard Oil Development Co. the patentee claims composition of matter composed mainly of a hydroxylated aromatic nucleus with a carbon atom attached directly thereto and which is also directly attached to two other carbon atoms, forming a secondary alkyl group containing more than 4 but less than 7 carbon atoms. The secondary hexyl resorcinols are especially powerful antiseptics, germicides and fungicides, and are greatly preferred over the normal hexyl resorcinols for these uses. The secondary hexyl resorcinols are substantially odorless and are more soluble in mineral oils than are the corresponding normal compounds.

2,104,584 (Jan. 4, 1938; appl. Oct. 15, 1934). DOUBLE SALTS OF COPPER ARSENITE AND A COPPER SALT OF A HIGHER UNSATURATED FATTY ACID. Frederick E. Dearborn, Washington, D. C.—The United States Government and people of the United States. The patentee claims a new compound of the general formula $3CuAs_2O_4$ CuOR, in which R is the anhydrite of linolic acid.

2,104,655 (Jan. 4, 1938; appl. July 28, 1936). INSECT SHIELD FOR AUTOMOBILES. Louis B. Jones, Polo, Ill.

2,104,687 (Jan. 4, 1938; appl. May 17, 1935). ANIMAL TRAP. Joseph D. Zahm, Lititz, Pa.—Animal Trap Co. of America, Lititz, Pa.

2,104,757 (Jan. 11, 1938; appl. May 31, 1934). INSECTICIDE SPRAY. Walter C. O'Kane, Durham, N. H. An insecticidal spray comprises a glyceride oil, an organic contact insecticide soluble in said oil, and an oil soluble emulsifying agent in amount

(Continued on Page 30)

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2,104,763 (Jan. 11, 1938; appl. Jan. 23, 1937). SPRAYING DEVICE AND REFILL FOR SAME. William A. Roehm, Lynbrook, New York.

2,105,459 (Jan. 11, 1938; appl. Feb. 28, 1936). HYDRATED TITANIUM - IRON ARSENATES AND METHOD OF MAKING SAME. Charles J. Kinzie and Eugene Wainer, Niagara Falls, N. Y.—The Titanium Alloy Manufacturing Co., New York, N. Y. An insecticidal composition contains as the active insecticidal ingredient hydrated titanium-iron arsenate essentially free from water-soluble arsenical compounds.

2,105,551 (Jan. 18, 1938; appl. Jan. 14, 1936). FUMIGATING DEVICE. William C. Purdy, Tallulah, La. An object of this invention is to provide an improved fumigating device which may be applied to boxes, bags, or other large or small articles in such a way that the fumigating material may be supplied at any time.

2,105,727 (Jan. 18, 1938; divided and this appl. Sept. 8, 1936; original application Jan. 6, 1933). INSECTICIDES. Charles B. Gnadinger, Minneapolis, Minn. The patentee claims an insecticide containing a polyselenide of a metal selected from the group consisting of alkali metals and alkaline earth metals.

2,105,831 (Jan. 18, 1938; appl. Nov. 22, 1935; in Germany Nov. 29, 1934). PRODUCTION OF HYDROGEN CYANIDE. Leonid Andrussow, Mannheim, Germany—I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany. The patentee claims in the production of hydrocyanic acid by passing a gaseous mixture containing ammonia, hydrocarbons and oxygen at elevated temperatures over catalysts the use of alloys of platinum and iridium containing from about one-half per cent to about 15 per cent of iridium as catalysts in the form of gauze from wires the thickness of which is at least 0.1 millimeter.

2,105,856 (Jan. 18, 1938; appl. Mar. 21, 1935). INSECTICIDAL OIL. Lysle R. Coleman, McAllen and Gerald L. Cowley, Alamo, Texas. A new insecticidal oil, non-toxic to vegetation, consists of a distillate fraction from crude petroleum oil which is characterized by having a viscosity of from 65 to 200 seconds Saybolt at 100° F., a specific gravity between .9000 and .9600, distilling between 500° F. and 800° F., and yielding an unsulphonated residue of between 60 and 85 per cent.

2,106,485 (Jan. 25 1938; appl. May 4, 1937). INSECT EXCLUDER. Ellis E. Hewitt, Edgewood, Pa.—The Westinghouse Air Brake Co., Wilmerding, Pa.

2,106,528 (Jan. 25, 1938; appl. Aug. 7, 1937). INSECT ELECTROCUTOR. Lloyd T. Jones and Joe K. Ellsworth, Berkeley, Calif.

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